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ABSTRACT

This report describes how the Oregon Career Information System (CIS) expanded its career information files by adding three new files relevant to education information. Descriptions are given of the Preparation file, containing information specifying various ways to prepare for a particular occupation; the Program file, which describes a complete array of educational and training programs; and the School file, which provides comprehensive institutional information such as degrees offered, financial aid, and housing. It is reported that the educational components were field tested to determine their value to individuals making career decisions, and that response of CIS users indicated that the components were easy to use, relevant to users' career planning, comprehensive in the scope of information provided, and well integrated with the rest of CIS. Also, the expanded system was found to have substantial impact on occupational and educational choices. The adult market for career information and the impact of CIS on other agencies are also analyzed. (Author/TA)

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EDUCATION COMPONENTS FOR A CAREER INFORMATION SYSTEM

Final Project Report

for

Fund for the Improvement of
Post-Secondary Education

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Project Completed

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CHAPTER I

INTRODUCTION TO EDUCATION COMPONENTS FOR A CAREER INFORMATION SYSTEM

PROJECT PRODUCES SEVERAL MAJOR FINDINGS

The purpose of this final report is to evaluate how effectively the Career Information System was expanded to include information on post-secondary institutions and programs in Oregon. In addition to providing a summary of the evaluation procedures and results, the final report highlights specific activities and findings related to System use by special audiences--adults using the System's educational information in several shopping centers in Oregon communities and prisoners in the Oregon State Penitentiary.

This analysis of a comprehensive, reliable and compatible bank of information on post-secondary educational institutions and the programs of study they each offer produced valuable insights into the usefulness of this type of information for a wide range of populations. The fact that CIS' users found this information very valuable is one of the major themes to emerge from the implementation of the Educational Components Project, as this report will illustrate.

Another finding discussed throughout the report is the discovery that the utilization of existing data to compile a relevant, comprehensive and comparable information system about schools and educational programs is much more difficult than originally anticipated. The procedures developed by the Career Information System to gather valid and reliable information about post-secondary institutions are an important result of the project.

The project uncovered a real need to change the CIS files from a structure that directly links occupational and educational information to one able to indirectly link occupational information to training program information through an intermediary Preparation file. Preparation file statements were produced to accompany each occupational description in CIS and then, for the occupations that required it, appropriate references to Program files were included in the Preparation statements.

Finally, a major new market for CIS' services was discovered. After field testing CIS in several shopping centers, it is apparent that a group of young adults, many of whom are out of school or unemployed, will use the Career Information System if it is available to them. In addition, it was found that these users would be willing to pay for the costs of the service.

PROJECT OUTLINES SEVERAL OBJECTIVES

The major objective of the Educational Components Project was to develop and then provide access to compatible educational information for a variety of user groups. As a result of the project, users now are able to obtain information when and where they want it in a manner that allows them to view alternatives quickly and accurately before pursuing a course of action. The expanded CIS addresses itself to the critical need for providing prospective educational consumers of all ages with detailed and accurate information on post-secondary educational opportunities.

Now that the Career Information System's educational information is available, consumers can find in the CIS files information on career preparation, descriptions of post-secondary educational programs in Oregon (including a list of schools that offer the programs), and characteristic information on all two- and four-year colleges and nearly all proprietary institutions in the state (see Chapter II for examples of how CIS presents specific information). The information has greatly improved the quality and usefulness of information available to educational consumers in Oregon, thereby enhancing their ability to make thoughtful decisions about their plans for further post-secondary education.

When the Educational Components Project was proposed originally, a series of long-term objectives was outlined. A diversified approach to the problems of expanding information in the CIS files to include educational topics and of measuring the effectiveness of the new information was proposed. The following objectives relate to the development of a model data collection system containing information on post-secondary training programs and schools.

1) Enhance the post-secondary educational consumer's decision-making capacity by improving the quality and usefulness of information. The following areas were considered in the study:

-Availability and accessibility of information to users.

-Ease of use by all consumers.

-Integration of occupational and educational information.

-Relevance of information to users' career and education plans.

-Adequacy and completeness of the information.

-Impact of information on users' career and education plans.

Chapter III gives a detailed description of the major research questions. Chapters IV, V, VI, and VII discuss how the expanded CIS fared in these major research areas.

2) Enhance the capabilities of CIS and other agencies to collect and disseminate high quality educational information to consumers. The following areas were considered in the study:

-Establishment of statewide mechanisms to improve information collection and dissemination processes.

-Cooperation between information producing, collecting, and distributing agencies to enhance efficiency of information development and quality of the information. Chapters II and VIII evaluate the success of the project at meeting these goals.

PROCEDURES FOLLOWED TO MEET THE OBJECTIVES

To achieve the objectives outlined by the project proposal, the following activities were undertaken.

1) Development of an Educational Components Advisory Committee. One of the first project activities was to develop an Advisory Committee to provide guidance to project staff and to be actively involved in the development of the information collection system. The Advisory Committee of 18 members was chosen to represent a variety of viewpoints and expertise, including those involved with information collection and management within the education establishment as well as those representing present and potential post-secondary educational consumers.

2) Survey of Present and Potential Post-Secondary Educational Consumers To Assess Their Information Needs. Studies previously conducted identify many specific information needs of education consumers. A study by Mary K. Kinnick attempted to compile a comprehensive and prioritized list of prospective college students' information needs.[1] The study found that student information needs far outdistanced the content of the information which was actually available, and that it is not possible to isolate a limited number of information items which would meet the needs of a majority of students. Kinnick concludes that only comprehensive information which allows the student to make inter-institutional comparisons of schools will meet students' needs. The Kathleen Jackson Miller study also concluded that available collegiate information came far from meeting students' needs and recommended that a computerized collegiate information system be developed to provide comprehensive and current information to prospective students.[2] James S. Coleman contends that the prospective college student receives information which is selectively disseminated by the colleges to further their own interests.[3] The relatively weak position of the student as opposed to the large organization of most colleges make it almost impossible for him or her to gather comprehensive, accurate and comparable information about a number of colleges, and so makes a rational choice of school difficult.

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[1]Mary K. Kinnick, Information for Prospective Students About Post-Secondary Education: A Partial Assessment of Need.

[2]Kathleen Jackson Miller, A Collegiate Information System.

[3]James S. Coleman, "The Principle of Symmetry in College Choice," Report of the Commission on Tests: II. Briefs (New York: College Entrance Examination Board, 1970), pp. 19-32.

3) Examination of Existing Information. As described in some detail in Chapter II, a thorough review of existing educational information in Oregon was conducted. The review of federal and state reports, college directories and school catalogs resulted in the discovery by project staff that considerably more primary data collection was necessary for development of educational information. The review determined not only what information was delivered to consumers, but what was not delivered as well.

4) Matching Assessed Consumer Needs with Available Information. Once consumer information needs and the existing availability of post-secondary information were assessed and results documented, it was decided that a supplementary data collection effort would be needed to collect available information where information needs were not being met. In addition to collecting this (usually directly from the institutions), the project staff sent the results of their research back to individual schools for review and validation.[4]

5) Development of the Model Information Collection System. Technical papers on developing the Program, Preparation and School files will describe in detail the procedures used to implement the System. In summary, during the first year of the Educational Components Project the institutions were not expected to generate all of the information that was shown to be of ideal benefit to consumers. The information to be collected was identified and standard collection designs and formats for delivering that information were developed. In the following year the collection design was implemented and presently a relatively complete file of information items identified as being useful to educational consumers is being disseminated throughout Oregon.[5]

SUMMARY

The ultimate goal of the Educational Components Project was to increase users' ability to select an appropriate institution to meet their post-secondary educational needs. The basic evaluation strategy, then, was to add new components to the existing Career Information System (in the form of the Preparation, Program and School files) and to test the effect of this information on the user's decision making. The following chapters describe how the new files were developed and what their effect on users has been.

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[4]For a full discussion of review procedures, see the forthcoming CIS Technical Paper that describes the development of the CIS Program and Preparation files.

[5]See Chapter II, p. 18, for a list of topics available in the School file.

CHAPTER II

DESCRIPTION OF SYSTEM DESIGN

SUMMARY OF DATA SOURCES ON POST-SECONDARY EDUCATION

A major premise of the educational components project was that coordinating bodies, regulatory agencies, and associations possessed the data necessary for component development. It was presumed that developing information on post-secondary educational institutions and their programs could be accomplished by instituting working agreements with data-producing agencies and, only in a few instances, supplementing the data.

The conclusion from extensive examinations of data sources, however, was that far less usable data was identified than was expected. The existing body of accessible post-secondary educational information is composed largely of school catalogs and promotional literature, college directories, and reports submitted to federal and state agencies. Examination of data from those sources has found most of them to be inconsistent at best, and often fraught with non-comparable and sometimes inaccurate information, in spite of the statutory origin of many of the reports. Following is a brief summary of the project's examination of federal and state reports, college directories and school catalogs.[1]

Federal and State Reports

Post-secondary educational institutions are regularly required to complete a myriad of federal and state reports that are intended for planning and management purposes. In Oregon, the Educational Coordinating Council (the state's designated "1202" agency), the Oregon State System of Higher Education, and the State Department of Education are the agencies responsible for collecting and storing the preponderance of educational planning and management data.

The data collection activities of these agencies are extensive, but there are several limitations in the applicability of agency data to system development that have reduced their use. Data which may suitably meet standards for planning purposes may or may not be comprehensive enough or formatted usefully for a consumer information system.

For example, the Educational Coordinating Council collects information on enrollment by program from all two- and four-year colleges. The information is collected from each institution by a survey which codes programs by the titles of The National Center for Educational Statistics A Taxonomy of Institutional Programs in Higher Education.

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[1]For a complete analysis of data sources, see the Mid-year Report, Oregon Career Information System: Educational Components Project, May, 1974.

Unquestionably, the survey provides a reliable summary of programs. However, an institution's specific program title often is different than the taxonomic title and the survey instruments do not reveal which programs are being reported under which taxonomic title. For example, "Personal Service Technologies" is a taxonomic division in which several different institutional programs might be coded, but there is no way to determine accurately which programs the institution is reporting as "Personal Service Technologies".

The survey would be vastly more useful to the Career Information System if a simple revision were instituted to permit institutions to list their program titles as well as data under each taxonomic sub-division. That kind of revision would make the survey a definitive master list of programs in Oregon for all two- and four-year colleges.

Further, educational data tends to be stored by the type of report (e.g., reports to the legislature, reports to the Office of Education, etc.). As a result, it is frequently difficult to convey data requests without making precise references to specific reports or collection designs.

Finally, many required reports are viewed by institutions as nothing more than required nuisances; thus, they are often prepared with less care and accuracy than is needed.

The result of those limitations has been that agency data that might have been useful to the project cannot be located readily, are in forms that make it very difficult to use, or have required considerable validation or revision prior to their use.

College Directories

There are numerous guides available that present information about colleges and universities. Some of the better known are the College Handbook published by the College Entrance Examination Board, Barron's Profiles of Colleges, and, in Oregon, Mapping Your Education, which includes all two- and four-year colleges in Oregon and Washington. While these guides provide information with which to compare institutions, they are far from the ideal. Problems from the perspective of both the consumer and the system developer are as follows:

-Most of the directories gather their data by sending lengthy questionnaries to institutions. They are without the authority or resources to insure complete or valid response and do no validation of data. The result frequently is the reporting of inaccurate information about the institutions.

-The guides commonly do not compare colleges on substantive dimensions other than selectivity and do not help consumers identify institutional differences in other ways.

-They focus on select educational sectors, usually the two- and four-year colleges, leaving out the full range of post-secondary educational alternatives.

For the foregoing reasons, the Career Information System has made little use of directories as a source of data for developing educational components.

School Catalogs

School catalogs comprise the single largest body of post-secondary educational information available to prospective consumers. Nearly every post-secondary institution has a catalog and makes it available to prospective students upon request and likewise distributes it to school counseling centers, libraries, and other locations where people seek post-secondary educational information.

Because of their availability and publication by institutions, catalogs are conventionally considered the most useful source of information available to consumers. Yet a review of school catalogs reveals that their accuracy and currency are questionable and that they are less than comprehensive sources of institutional information.

Evident problems with school catalogs that make them frequently unreliable information sources are that:

-They are usually compiled well in advance of distribution and frequently include out-of-date information, particularly in program and course listings and cost sections. (This problem has been compounded recently as some schools, facing tight budgets, have begun publishing catalogs biennially.)

-Catalogs usually are to serve two clientele -- prospective students and current students -- mixing information for both in one complicated publication.

-Catalogs rarely provide prospective students complete information about campus life. They concentrate on campus assets with varying candor and/or list clubs and organizations, but seldom convey potential campus liabilities.

-They vary significantly in completeness of information, often forcing interested students to write for clarification and/or complete information.

-Spurious attempts are frequently made to relate programs to careers without documentation. As a result, students are often misled into believing that completion of a certain program will provide an advantage in seeking specific employment.

-Institutional program titles frequently do not provide an indication of program content and few clarifying statements are provided.

The foregoing anomalies appear in one form or another in nearly every catalog. The result is that catalogs are an imprecise and often misleading source of information for both the student and the information system developer. Nevertheless, the project has used catalogs as a source for some information in developing the educational components. For example, catalogs provide the only available descriptive information about programs, so they have been used in developing descriptions of post-secondary educational programs. Spurious information has been ignored and other claims discounted, but the catalog information has been used. To compensate, the project has interposed several time consuming validation steps to enhance the reliability of the developed information on programs.

School catalogs have been used to check other sources, particularly in developing a master list of program titles. Catalogs were also used to complete applicable portions of questionnaires before sending them to post-secondary institutions in order to ease the data gathering demands the questionnaire placed on the institutions. However, few questionnaire sections could be completed from catalog material before distributing the form to the institutions.

Summary of Review of Information Sources

The dearth of validated information available in publications and agency data banks is of concern on two levels. First, it required considerably more primary data collection for development of the educational components than one would expect. Secondly, and more importantly to post-secondary education, it reflects the need for more stringent qualitative and quantative regulation of information provided to prospective post-secondary educational consumers. The recent interest in expanding the consumer protection movement to post-secondary education is a starting point. But, there is a need for stronger measures, perhaps statutory requirements that institutions reveal certain standardized information about themselves in a common language and/or the development within monitoring agencies of the resources to enforce and validate reporting of standardly defined and derived data which could then be used for planning, management, and relayed to consumers through systems like CIS.

SUMMARY OF PROJECT COORDINATION OF SOURCES AND POOLING OF DATA

The following are examples of some of the project's data coordinating activities and arrangements which have been made for pooling usable data:

Activities

-Reviewed the major institutional directories for ideas for developing the file of institutional information.

-Examined the possibility of using the College Entrance Examination Board's data bank on institutions for educational component development. Examination revealed inaccuracies and inconsistencies in data for Oregon institutions.

-Examined data of coordinating agencies in Oregon, some of which has been used in component development. Examination results have led to encouraging agencies to review existing data for applicability to educational consumers.

-Reviewed school catalogs for reliability and applicability to component development. Have verified some information by calling schools, comparing against other sources, etc.

-Examined college search systems operating in U.S. for ideas for component development. Discarded many design concepts as inappropriate for a system like CIS which is statewide rather than nationwide.

-Impressed upon many institutional personnel and personnel of state regulatory and coordinating agencies the need for substantive improvements in the post-secondary educational information bank.

Data Arrangements

-Compiled a master list of post-secondary educational programs in Oregon from other less comprehensive listings.

-Made arrangements with and receive regularly master listings of Veterans Administration-approved programs in Oregon's community colleges and proprietary schools for use in updating the master program list.

-Made arrangements with the State Department of Education to use certain program data that they collect for validating and updating community college program information in the educational components.

-Made arrangements with the Oregon State System of Higher Education to receive periodic listings of new programs in the four-year public colleges.

-Made arrangements with the State Department of Education to receive periodic listings of existing proprietary schools.

-Made arrangements with the Educational Coordinating Council to receive copies of HEGIS Enrollment Reports and Student Enrollment Data Surveys for all two- and four-year colleges in Oregon.

-Made arrangements with all two- and four-year schools and a large proportion of proprietary schools to get selected data directly from them for use in developing the educational components.

-Developed an Advisory Committee composed of institutional representatives and agency personnel, in part, to assist in identifying reliable additional data.

-Continue to identify additional reliable data sources for use in updating the educational components.

Each Preparation entry includes a narrative discussion of the ways to prepare for the occupation, including applicable segments of the following information:

-The skills that one must develop to satisfactorily perform the job duties of that occupation;

-Legal qualifications for employment in the occupation (e.g., training, licenses, age, bonding, etc.);

-Ways to prepare for entry into the occupation, including distinctions between training and/or experience required for licensing, preferred by employers, and conventionally thought of as ways to prepare;

-Cross-reference to appropriate training programs included in the Program File;

-Description of the sequencing of the employment queue;

-Ways to prepare for advancement;

-Tips for improving employability.

PREP FOR 4128 FORESTRY TECHNICIANS

SKILLS: DRAFTING, SURVEYING, CRUISING, TECHNICAL REPORT WRITING, FIRST AID, MATHEMATICS & FORESTRY SCIENCE TO MEASURE FOREST GROWTH, FAMILIARITY WITH EQUIPMENT & ABILITY TO WORK WITH LITTLE SUPERVISION. PREPARATION: PRESENT HIRING PRACTICES SHOW THAT ABOUT 70% OF THE EMPLOYERS REQUIRE ONLY HIGH SCHOOL TRAINING FOR ENTRY LEVEL FORESTRY TECHNICIAN POSITIONS. HOWEVER, TECHNICAL POSITIONS OFTEN REQUIRE PREVIOUS WORK EXPERIENCE OR TRAINING WHICH IS AVAILABLE AT MANY COMMUNITY COLLEGES (SEE PROG 069, FORESTRY AIDE). WORK EXPERIENCE SHOULD INCLUDE PLANTING TREES AND/OR FIGHTING FIRES. ADVANCEMENT TO FOREST TECHNICIAN MAY COME AFTER SUITABLE EXPERIENCE IS GAINED OR FORMAL TRAINING IS COMPLETED. FOREST TECHNICIANS IN GOVERNMENT MUST PASS A CIVIL SERVICE EXAM AND BE PLACED ON A WAITING LIST.

DESIGN OF THE EDUCATION COMPONENTS

The functional objectives for developing educational components were to allow users to make relevant comparisons of career and educational opportunities. Review of other information systems and sources, consultation with educational leaders in the state, and surveys of CIS users led to the development of three new files of information to accompany the existing occupational information. The new files are Preparation, Program, and School files.

A major design principle of expanding CIS was to integrate educational information in a logical sequence with occupational information so that a user starting in the System with the QUEST questionnaire would be led logically through occupational information, educational program information, and information about post-secondary institutions. To accomplish that flow, each file has been related to each other through statements that refer users from appropriate entries in one file to related entries in another file (e.g., users accessing occupational information on "Architects" are routed ultimately to information about "Architecture" programs, etc.).

While files are systematically related, they are also individually accessible so that a user who wants only education program information need not take occupational information or vice versa. Thereby, the System encourages broad exploration and relation of post-secondary education to careers but recognizes that people come to the System with differing information needs.

For reasons described previously, most of the data used in developing the educational components has been compiled by project staff from documents, interviews and questionnaires sent to post-secondary institutions. As the kinds of universally collected data expands, CIS will collect it and incorporate it into its information files.

Following is a description of the manner in which System occupational information has been linked to educational information and a summary of the contents of the three new files.

Linking Occupations and Educational Programs

Conventionally, guidance systems and publications list educational and training programs directly under occupational titles. Thus, "Accounting" programs are linked directly to the occupation "Accountant"; "Journalism" programs are linked directly to "Writers and Editors"; and so on.

That is the way the Oregon Career Information System initially linked occupational and educational information. The Education file included an entry on training alternatives for each occupation in the System. However, handling the relationships of post-secondary educational programs and training to occupations in the foregoing manner is too simplistic; the relationship is not as direct as this organization implies.

First, not all post-secondary educational programs have explicit or in some cases, even implicit occupational training objectives. English literature and history programs, for example, cannot be linked directly to specific occupations. To list them under the names of specific occupations seriously misstates the essential character of such liberal arts programs.

Secondly, many programs have multiple objectives, including, along with disciplinary education, preparation for several occupational fields. Psychology is such a program: Should it be coded as preparation for social work or counseling, or should its liberal arts character be emphasized?

Thirdly, to list educational programs under occupational titles implies that they constitute adequate occupational preparation. While many do, there is frequently no evidence beyond similarity in titles for making the link. "Accounting" programs range from a few months to several years and cannot all produce equally qualified accountants.

Fourthly, there are various ways to prepare for most occupations. Most occupations have more than one port of entry and each should be discussed, not just those which are formal educational programs with similar titles. "Auto and Body Repairers", for example, may learn the skills of the trade informally, through a formal apprenticeship program, or through a community college or proprietary school program.

Despite these problems with direct linkage, there is a way to provide comprehensive occupational and educational information without misrepresenting their true relationships; that is to develop separate occupational and educational information files and link them <u>indirectly</u> by a file that describes the various methods of occupational preparation. This approach permits a complete taxonomy of occupations, under occupational titles ("Accountants" "Carloaders") and a complete taxonomy of educational training programs under program titles ("Accounting", "Philosophy") in separately accessible files.[2]

Preparation File

CIS' Preparation (PREP) file is the bridge from occupational to educational information. (References from programs to occupations are made in the Program file.) PREP includes entries for each of the occupations in the information system. Each entry includes a research-based description of the various ways to prepare for a particular occupation. If the occupation does not require formal post-secondary training, statements about the usual method of preparation as well as other hiring channels can be made. If the occupation does require formal training, statements about the kinds of training most propitious for occupational entry can be made and users can be referred to appropriate programs stored in the independently accessible Program file.

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[2] In the Oregon CIS, there are 225 occupational titles, and, as a result, 225 preparation entries. The PROG file contains entries for 125 fields of study.

Preparation file entries have been developed gradually. Initial entries generally included only occupational licensing requirements and cross-references to appropriate educational programs in the Program file. Over time, entries have been expanded and will continue to be expanded. This approach to file development has been necessitated by a dearth of existing data and the resulting need to rely heavily on original data collection.[3] Despite the relative incompleteness of Preparation entries in the early stages of testing of the expanded CIS, 83 percent of users in five shopping center test sites indicated that the file entries provided all or nearly all the information they needed to know about occupational preparation. Additionally, users apparently found the Preparation file to provide a ready conceptual link between occupational and education information. For example, 95 percent of all users who access occupational description information also accessed a corresponding Preparation entry. And, 80 percent of those who accessed Preparation entries subsequently accessed appropriate Program file entries.

On the basis of this evidence, it can be said that the Preparation file provides a logical and workable way of linking occupational and educational information. It should be noted, also, that statements cross-referencing users from file-to-file have been strengthened considerably since the time most of the pilot testing was performed. Presumably, therefore, file linkage is even stronger now than it was during the pilot-test period.

Program File

Post-secondary educational programs similar in content often vary in title from school to school. Likewise, programs with similar titles are not always similar in content. To develop descriptions of post-secondary educational programs first requires a list of program titles that is workable in number yet comprehensive and representative of the various programs in the state. Each program title must be representative of an academic field or training area and frequently must be general enough to encompass several program options or specialties.

To meet those criteria, the National Center for Educational Statistics (NCES) A Taxonomy of Instructional Programs in Higher Education has been converted to provide a master listing of program titles.[4] The conversion yielded 125 subject areas that are representative of post-secondary educational offerings in two- and four-year colleges, proprietary institutions, and non-institutionally based training, such as apprenticeship programs. In addition, programs not offered in Oregon but available to residents through the Western Interstate Commission on Higher Education (WICHE) have been included (e.g., "Veterinary Medicine").

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[3]See forthcoming CIS Technical Paper on developing Preparation and Program files for additional discussion of data sources.

[4]See forthcoming CIS Technical Paper on developing Preparation and Program files for details on the conversion of the Taxonomy.

Each subject area title is included in the Program file and includes a descriptive overview of the programs and a list of schools that offer them. Each entry includes: types of programs; specialties; degrees offered; kinds of schools offering the program; length of programs; program emphasis, including similarities or differences from school to school; examples of courses contained in the curriculum; and, a cross-reference to related programs. The file includes a list of schools that offer the program, the institution's particular program title and other institutionally-specific information not dealt with in the narrative (e.g., special costs, program schedule, pre-requisites, differing emphases, etc.).

The school list is loaded in the computer by geographic region so that eastern Oregon residents can obtain a list of schools in their region only, or a full listing, depending upon their preference. Users may terminate the listing of schools if desired.

PROG FOR 69

069 FORESTRY AIDE (FOREST TECHNOLOGY) PROGRAMS

THESE PROGRAMS INTEND TO PREPARE PEOPLE FOR FORESTRY AIDE AND TIMBER PRODUCTS INDUSTRY POSITIONS & ARE OFFERED AT MOST COMMUNITY COLLEGES. THE PROGRAMS VARY EXTENSIVELY IN TITLE & EMPHASIS FROM SCHOOL TO SCHOOL (ALSO SEE DESC 4124 FORESTERS, & DESC 4128 FORESTRY TECHNICIANS).

COURSEWORK: CONTENT VARIES WITH PROGRAM EMPHASIS. HOWEVER, MOST INCLUDE ALL OR MANY OF THE FOLLOWING COURSES:

MAPPING	FOREST PRODUCTS
PHOTO INTERPRETATION	LOGGING METHODS
MATHEMATICS	SURVEYING
FIRE CONTROL	FOREST OPERATIONS
BOTANY-RELATED COURSES	DRAFTING

OTHER COURSES USUALLY RELATE TO THE SPECIFIC PROGRAM EMPHASIS. CLASS INSTRUCTION INCLUDES LOTS OF FIELD EXPERIENCE, LABORATORY & CLASSROOM WORK. HARD PHYSICAL ACTIVITY REQUIRED IN SOME COURSES. CONSULT COLLEGE CATALOGS FOR MORE COMPLETE DESCRIPTIONS OF FORESTRY TECHNOLOGY CURRICULUM.

RELATED PROGRAMS: 068 FORESTRY; 067 FISHERIES AND WILDLIFE SCIENCE; 061 AGRICULTURE; 065 AGRICULTURE TECHNOLOGY.

SCHOOLS:

2 EASTERN OREGON AREA SCHOOLS

- - - - - 22412 TREASURE VALLEY COMMUNITY COLLEGE - ONTARIO: 'RANGE/FOREST TECHNICIAN': PROGRAM INTENDING TO PREPARE PEOPLE TO WORK SPECIFICALLY IN EASTERN OREGON & INTERMOUNTAIN AREA FORESTS.
- - - - - 22413 CENTRAL OREGON COMMUNITY COLLEGE - BEND: 'FOREST TECHNOLOGY': 2-YEAR ASSOCIATE DEGREE PROGRAM. MAJOR EMPHASIS ON FIELD APPLICATION OF FORESTRY TECHNIQUES USED IN TIMBER & TIMBERLAND MANAGEMENT.

2 N. COAST & PORTLAND AREA SCHOOLS

- - - - - 22105 CLATSOP COMMUNITY COLLEGE - ASTORIA:
'FOREST MANAGEMENT TECHNOLOGY': 2-YR. ASSOCIATE DEGREE PROGRAM. DEGREE OPTIONS IN FOREST MANAGEMENT & FOREST MANAGEMENT-ENGINEERING.
- - - - - 22709 MT. HOOD COMMUNITY COLLEGE - GRESHAM:
'FOREST TECHNOLOGY': 2-YEAR ASSOCIATE DEGREE PROGRAM. PROGRAM SLOTS LIMITED; ADMISSION TO MHCC DOES NOT GUARANTEE ADMISSION TO PROGRAM. EMPHASIS ON RESEARCH & SERVICE IN FOREST LAND MANAGEMENT & PRODUCTS. CONTACT MHCC COUNSELING DEPARTMENT FOR ADMISSION INFORMATION.

2 MID-WILLAMETTE VALLEY & EUGENE AREA SCHOOLS

- - - - - 22207 CHEMEKETA COMMUNITY COLLEGE - SALEM:
'FOREST PRODUCTS TECHNICIAN': 2-YEAR ASSOCIATE DEGREE PROGRAM. EMPHASIS ON RESEARCH, DEVELOPMENT, QUALITY CONTROL, & SALES IN THE WOOD PRODUCTS INDUSTRY.
'FOREST TECHNICIAN': 2-YEAR ASSOCIATE DEGREE PROGRAM. EMPHASIS ON FIELD APPLICATION OF FORESTRY TECHNIQUES USED IN TIMBER & TIMBERLAND MANAGEMENT.
(SUMMER EXPERIENCE IN FOREST INDUSTRY MAY REPLACE SOME COURSES IN EITHER PROGRAM WITH PRIOR DEPARTMENT APPROVAL.)
- - - - - 22804 LANE COMMUNITY COLLEGE - EUGENE:
'FOREST TECHNOLOGY': 2-YEAR ASSOCIATE DEGREE PROGRAM. ADMISSION REQUIRES INTERVIEW WITH DEPARTMENT & SLOTS ARE LIMITED; APPLY BY JUNE TO INSURE ADMISSION.

3 SOUTHERN OREGON AREA SCHOOLS

- - - - - 22103 UMPQUA COMMUNITY COLLEGE - ROSEBURG:
'FOREST TECHNOLOGY': 2-YR. ASSOCIATE DEGREE PROGRAM. DEGREE OPTIONS AVAILABLE IN TECHNOLOGY & FOREST RECREATION.
'LOG TRUCK DRIVING': SIX WEEK COURSE, BEGINNING IN EARLY SPRING. INCLUDES CLASSROOM & SUPERVISED DRIVING.
- - - - - 22102 ROGUE COMMUNITY COLLEGE - GRANTS PASS:
'FOREST INDUSTRIES': 2-YEAR ASSOCIATE DEGREE PROGRAM.
'FELLING AND BUCKING': TWO-TERM, CERTIFICATE PROGRAM. EMPHASIS ON LOGGING TECHNIQUES. FIRST TERM, CLASS & FIELD EXPERIENCE; SECOND TERM MINIMUM OF 30 HOURS PER WEEK ON-THE-JOB TRAINING.
'LOG TRUCK DRIVING': TWO-TERM, CERTIFICATE PROGRAM. 80 HRS. CLASSROOM INSTRUCTION ON RULES, SAFETY, & DRIVING TECHNIQUES. 48 HRS. OVER 2 TERMS SPENT DRIVING TRUCKS.
'LOGGING TECHNIQUES': 2-TERM CERTIFICATE PROGRAM INTENDING TO PREPARE PEOPLE FOR ENTRY LOGGING POSITIONS. COURSES AVAILABLE IN LOADER OPERATION, TRACTOR OPERATION, YARDER OPERATION, LANDING CHASER, & CHOKER SETTING.
- - - - - 22101 SOUTHWESTERN OREGON COMMUNITY COLLEGE - COOS BAY:
'WOOD INDUSTRIES TECHNOLOGY': 2-YEAR ASSOCIATE DEGREE PROGRAM.

School catalogs were used as a major source for developing file entries because they are the only source that consistently provides descriptive information on programs. Catalogs were used with clear recognition of their weaknesses and have been augmented by sending draft copies of file statements to curriculum planners at the Oregon Department of Education and State System of Higher Education and to curriculum contact persons at each institution for review and revision.[5]

It is expected that Program entries will be expanded significantly over time to include such institutionally specific information as average length of stay to degree, drop-out and completion rates, faculty demographics, etc., to provide System users with additional information with which to compare programs at different institutions. Review panels composed of faculty, students and institutional and system-wide planners and researchers will be used to develop the file entries further.

Despite the perceived need to expand the information provided in the Program File, 95 percent of System users who accessed Program file entries during pilot-testing in the summer and fall of 1974 indicated they received all or nearly all of the information about programs that they wanted.

School File

As discussed previously, conventional sources of descriptive information on post-secondary educational institutions do not foster comparison of institutions and may or may not include the information consumers want about the institutions. In developing the School file, major design principles were (1) to include all sectors of post-secondary educational institutions, including licensed proprietary institutions, (2) to include as much information in a common format for all institutions as available information would allow, and (3) to allow System users to compare information about one institution with similar information about other institutions.

To determine what information to include in the file, a survey of approximately 200 high school seniors and college freshmen from various geographical locations in Oregon was conducted in the fall of 1973. From a checklist of 113 items of information about schools, respondents indicated the most personally useful information pieces. Results of the survey made it clear that what is important to one student is often less so to another.

Results of the survey reinforced the need to provide as much information as possible to meet the varying needs of users. It also led to designing the file format so that users may access any or all of the information pieces stored on any given institution.

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[5] For full discussion of review procedures, file updating procedures, and a copy of the Writing Guide for developing Program entries, see CIS Technical Paper on developing Preparation and Program files.

The first step a user takes in accessing information from the School file is to select up to three institutions on which to obtain information. The CIS User Handbook lists institution names with individual access code numbers. As seen below, a user might type in SCH 44823, 22709, 21718 to get information about Merritt Davis Business College, Mt. Hood Community College, and Portland State University.

Schools (cont'd)

21716 Medical School, University of Oregon Health Sciences Center
44823 Merritt Davis Business College (Eugene)
44222 Merritt Davis College of Business (Salem)
49223 Mid-Valley Airservice, Inc
71217 Modern Beauty College, Inc.
81703 Moler Barber College, Inc.
71718 Montavilla Beauty School, Inc.
21221 Mt. Angel Seminary
22709 Mt. Hood Community College
71782 Mt. Hood Community College Beauty School
49757 Multi Arts Center
71721 Multnomah College of Hair Design, Inc.
22723 Multnomah School of the Bible
21719 Museum Art School

49124 Newport Flying Service
71716 North Clackamas College of Hair Design
49759 North Pacific Dental & Medical College
21829 Northwest Christian College
44724 Northwestern College of Business
21716 Nursing School, University of Oregon Health Sciences Center

99704 Olson's Dog Grooming
49425 Ontario Flight Service
44702 Oregon Career Institute
71722 Oregon City Beauty School
99111 Oregon College of Art
44134 Oregon College of Business, The
21215 Oregon College of Education
21701 Oregon Graduate Center
44725 Oregon Institute of Insurance
21420 Oregon Institute of Technology
49861 Oregon Meat Cutting School
49762 Oregon Polytechnic Institute
44726 Oregon School of Insurance
99115 Oregon School of Massage
21219 Oregon State University
21812 Oregon, University of

44727 Pacific Academy of Accountancy
21711 Pacific University
49426 Pendleton Airmotive, Inc.
71423 Pendleton College of Beauty
71224 Phagans' Beauty College
71425 Phagans' Central Oregon Beauty College
71726 Phagans' Gateway College of Beauty
71228 Phagans' School of Beauty
71727 Phagans' School of Hair Design
71735 Phagans' Tigard Beauty School
44783 Porter Martin Real Estate School
21708 Portland, University of
21703 Portland Bible College
22710 Portland Community College
44741 Portland Real Estate School
21718 Portland State University
49764 Portland Upholstering School

44744 Real Estate School of Beaverton
44714 Real Estate School of Oregon
44745 Realty Training School
44784 Receptionist School of Oregon
21706 Reed College
Religious and Bible Colleges, See:
21729 Columbia Christian College
22722 Concordia College
21704 Conquerors Bible College
21826 Eugene Bible College
22714 Judson Baptist College
21221 Mt. Angel Seminary
22723 Multnomah School of the Bible
21829 Northwest Christian College
21703 Portland Bible College
21204 Western Baptist Bible College
21728 Western Conservative Baptist Seminary
21727 Western Evangelical Seminary
71129 Rogue Beauty College
22102 Rogue Community College
49127 Rogue Valley Skyways
49766 Ron Bailie School of Broadcast
71179 Roseburg Beauty College
49128 Roseburg Skyways
49429 Round-Up Air Service

49284 Salem Aviation

Once the user selects the institutions and enters their code numbers, the computer asks "What do you want to know about the Schools? Type in the School Topics. Example: 1-5, 21, 71, 85. The user then selects any or all of the information about the school included in the file, entering the appropriate code numbers for each desired informational topic.

For example, the user might pick 01, 02, 75, 77, 85, 89 from the list below to access the following topics: General Information, Student Enrollment, Freshman Admission Requirements, Admission Application Procedures, Single Student Costs and Financial Aid Application Procedures.

School Topics

After entering school numbers, you will need to tell the computer what you want to know about the schools.

Note the topics you want data about.
Then see "How to use the computer terminal," page 24.

GENERAL INFORMATION

01 General Information (type of school, location, etc.)
02 Student Enrollment
03 Minority Student Enrollment
04 Student Enrollment by Age Group
05 Contact for More Information
71 Alternative Credit Opportunities
72 Size of Freshman Classes
73 School Graduation Requirements
74 Availability of Pass/Fail Grading

PROGRAMS OF STUDY
(lists types of programs offered)

06 Agriculture and Natural Resources
08 Architecture
11 Area Studies
13 Biological Sciences
14 Business & Management
19 Communications
21 Computer & Information Sciences
23 Education
25 Engineering
27 Mechanical Engineering Technologies
31 Fine and Applied Arts
33 Foreign Languages
35 Health Services
41 Home Economics
42 Law
44 Letters (English, Philosophy, Speech)
46 Library Science
48 Mathematics
51 Military Science
52 Physical Science
54 Psychology
56 Public Affairs & Services
58 Social Sciences
61 Interdisciplinary Studies
63 Other Programs of Study
65 Foreign Study Programs
66 Honors Programs
67 Reserved Officer Training (ROTC)
68 Ethnic Studies Programs
69 Women's Studies Programs
70 Other Special Programs

ADMISSIONS
(requirements for entering the schools)

75 Freshman Admission Requirements
76 Transfer Admission Requirements
77 Admission Application Procedures
78 Special Admission Procedures for Minority Students
79 Special Admission Procedures for Adults

HOUSING

80 Dormitory Information
81 Fraternity & Sorority Information
82 Cooperative Housing Information
83 Off-Campus Housing Information
84 Married Student Housing Information

COST AND FINANCIAL AID

85 Single Student Costs (tuition, board and room, etc.)
86 Married Student Costs (including single parents)
87 Part-time Student Costs
88 Types of Financial Aid Available
89 Financial Aid Application Procedures
90 Examples of Financial Aid Received by Students
91 Availability of Part-time Jobs

SERVICES

92 Services for All Students (counseling, tutoring, etc.)
93 Student Services for Special Groups
101 Health Services Available
102 Day Care Facilities Available
103 Library Available
104 Bus Service to School Available
105 Student Parking Available

Below is a prototype of the information for a user who requested those informational pieces.

```
? SCH 44823,22709,21718
WHAT DO YOU WANT TO KNOW ABOUT THE SCHOOLS?
    TYPE IN THE SCHOOL TOPICS.  EXAMPLE: 1-5, 21, 71, 85
    SCHOOL TOPIC CODES ARE ON PAGE 23 OF YOUR HANDBOOK.
?1-2,75,77,85,89
```

	MERRITT DAVIS BUSINESS COLLEGE SO OAKWAY MALL EUGENE, OR 97401	MT. HOOD COMMUNITY COLLEGE 26000 SE STARK GRESHAM, OR 97030	PORTLAND STATE UNIVERSITY P.O. BOX 751 PORTLAND 97207
01 GENERAL INFORMATION			
TYPE OF SCHOOL	PRIVATE VOCATIONAL	2-YEAR PUBLIC	4-YEAR PUBLIC
GRADUATE DEGREES	NONE	NONE	EXTENSIVE
SCHEDULE OF CLASSES	DAY ONLY	DAY & NIGHT, QUARTER SYSTEM	DAY & EVENING, QUARTER SYSTEM
CORRESPONDENCE COURSES	NO	NO	NO
UNDERGRAD SUMMER CURRICULUM	EXTENSIVE	EXTENSIVE	EXTENSIVE
LOCATION OF SCHOOL	EUGENE	GRESHAM	PORTLAND
POPULATION	90,100	16,470	385,600
CAMPUS TO CITY CENTER	2 MILES	2 MILES	1 BLOCK
MILES FROM PORTLAND	110	14	IN PORTLAND
02 ENROLLMENT	FALL, 1975	FALL, 1975	FALL, 1975
TOTAL (EXCLUDING ADULT EDUCATION)	120	10,426 (ADULT ED IS APPROX. 2,300)	15,320
WOMEN	115	5,046	7,035
MEN	5	5,380	8,285
FULL-TIME STUDENTS	NOT REPORTED	4,381	8,007
PART-TIME STUDENTS	NOT REPORTED	6,045	7,313
OUT-OF-STATE STUDENTS	2	125	1,019
NEW STUDENTS (FROSH)	NOT REPORTED	4,049	NOT REPORTED
NEW WOMEN		2,014	
NEW MEN		2,035	
75 FRESHMAN ADMISSION			
EDUCATION REQUIRED	HS DIPLOMA OR EQUIVALENT	HS DIPLOMA OR EQUIVALENT	HS DIPLOMA OR EQUIVALENT
H.S. GPA REQUIRED	2.5	---	2.25 GPA
OTHER ADMISSION ROUTES	YES	---	SAT-890, ACT-20, GED 55
REQUIRED TESTS	YES	---	SAT OR ACT
PERSONAL INTERVIEW	REQUIRED FOR IN-STATE APPLICANTS	---	NOT REQUIRED
H.S. COURSES REQUIRED OR RECOMMENDED	BUSINESS COURSES RECOMMENDED	---	NONE
ADMISSION SELECTIVITY	NOT APPLICABLE	---	NOT APPLICABLE
DROP-OUT RATE (SEPT-JUNE)	16.5%	OPEN ENTRY; OPEN EXIT	NOT AVAILABLE

77 ADMISSION APPLICATION PROCEDURES			
ITEMS TO SUBMIT:			
APPLICATION FORM	YES	YES	YES
TRANSCRIPT	NO	NO	YES
APPLICATION FEE	$25	$5	$10
PERSONAL RECOMMENDATIONS	NONE	NOT REQUIRED	NO
DEADLINE	NONE	OCT. 10 - FALL	FALL-SEPT 22
85 SINGLE STUDENT COSTS	AS OF FALL 75	AS OF FALL 75	AS OF FALL 75
TUITION AND FEES	$1,395-1,795	$300	$648
BOARD, ROOM, EXPENSES	$1,230-1,730	$1,630-2,430	$2,015-2,415
TOTAL COSTS	$2,625-3,525	$1,930-2,730	$2,663-3,063
	REFUND POLICY FOR TUITION	FULL REFUND IF WITHDRAWN BY END OF 2ND WK	REFUND POLICY FOR TUITION (1ST 6 WEEKS)
89 AID APP PROCEDURES			
ITEMS TO SUBMIT:			
PARENTS/STUDENT'S CONFIDENTIAL STATEMENT	INCOMING STUDENTS	ALL STUDENTS	ALL STUDENTS
-PREFERRED DATE	JULY 7	APR. 1	JAN. 15
-ABSOLUTE DEADLINE	NOT REPORTED	NONE	NONE
ORE STATE SCHOLARSHIP COMMISSION APPLICATION	NOT REQUIRED	ALL STUDENTS	FRESHMEN
-PREFERRED DATE		FEB. 1	FEB. 1
-ABSOLUTE DEADLINE		NONE	NONE
SCHOOL FINANCIAL AID APPLICATION	60 DAYS BEFORE COURSES BEGIN	NONE	UPPERCLASSMEN
-PREFERRED DATE			FEB. 15
-ABSOLUTE DEADLINE			NONE
BASIC EDUCATIONAL OPPORTUNITY GRANT (OBTAIN BEOG APPLICATION FROM YOUR SCHOOL COUNSELOR. STUDENT NOTIFIED OF GRANT AWARD BY GOVT.)	ALL STUDENTS	ALL STUDENTS	ALL STUDENTS
OTHER (PREFERRED & ABSOLUTE DEADLINES: MAILING APPLICATION BY PREFERRED DATE GIVES YOU PRIORITY STATUS FOR FINANCIAL AID. BUT YOU MAY STILL RECEIVE AID IF YOU MAIL APPLICATION BEFORE THE ABSOLUTE DEADLINE.)	NONE	NONE	NONE

The format for the School file requires short entries for each topic area. Rather than long, narrative descriptions, the format emphasizes comparison of information about different institutions. Initially, it was thought that additional detailed information about the institutions could be stored in book form that would supplement the computerized information. Asterisks accompanying information pieces in the computer bank needing additional amplification would then refer users to the books for supplemental information. The supplemental information books were published and used in pilot-testing the expanded CIS. Test results showed, however, that System users did not refer to the books for supplemental information. As a result, the supplements have been discontinued and the computerized School information has been revised to include information previously supplemented. Additionally, institutional contact people have been added for special programs and for other types of information where additional explanation may be desired by a System user (e.g., contact name for receiving a residence hall application, etc.).

Some of the design features of the School file are:

-It is a comprehensive bank of information on post-secondary institutions in that it includes information on four-year institutions, community colleges, and proprietary schools.

-It facilitates comparison of comparable information on up to three institutions at one time.

-It allows users to select as much or as little information as they want when they want it.

-It has a universally applicable code numbering system for all institutions based upon standard code systems for state, geographic area and type of school which can be readily used anywhere in the United States.

Data Collection for School File. Each of the 208 post-secondary institutions were asked to complete a lengthy questionnaire to provide the necessary data. That step was required by the lack of any existing pool of data that was comprehensive and reliable enough to provide all of the institutional information deemed desirable. Questionnaire items for which reliable data existed were posted before sending the questionnaire to the institutions, thereby providing further validation of existing data and reducing the institution's collection tasks. (e.g., enrollment figures taken from the HEGIS Enrollment Reports were filled in appropriately on the questionnaires.)

The questionnaires were mailed to each institution at varying dates in March of 1974. One hundred percent of all two- and four-year institutions and 51 percent of all proprietary schools returned the questionnaires. Response to individual items varied, as is illustrated by reference to the inquiry about receipt of financial aide in Table 1.

Table 1

Schools Initially Contacted and Those Providing Information to the Career Information System

Spring 1974

Type of School	Number of Schools in Oregon Receiving CIS Questionnaire	Percent Replying in Relatively Complete Fashion	Percent Answering Question 90: "Applicants Receiving Aid"
2- & 4- Year Public	20	100%	65%
Non-Profit Private	17	100	82
Private Profit-Making	151	51	38
TOTAL	188	60%	45%

Schools not returning questionnaires are still included in the School file, but only information on their programs is reported.[6] The School file will be updated annually with additional information added as it becomes available.

Information on student activities and campus atmosphere are significant areas in which CIS has not collected nor formatted information to date. Staff have explored several alternatives for collecting such data but have discarded each as infeasible or superficial. For example, one possibility was to list activities, clubs, organizations and events on campus. The result would have allowed users to access activities ranging from "Young Democrats" to "Rodeo Club" and "Intercollegiate Football", getting a "yes" or "no" response as to the existence of the particular activity on the campus. An obvious weakness

[6]See Mid-Year Report and Technical Paper on Developing a School File for additional details on data collection and file formatting.

in this approach is that considerable space is used for information that likely would be accessed infrequently. Additionally, that type of listing says little about the campus atmosphere or school's social climate.

Other approaches that might generate a more realistic description of campus atmosphere have been explored; however, each has been discounted as being too costly or too uncontrolled, particularly if information on the atmosphere on public and private colleges as well as proprietary institutions is to be collected.

During pilot-testing of the expanded CIS, users who accessed the School file requested information on two (mean = 2.08) schools at a time. The "average" School file user asked for information on four or five (4.53) different topics per school. During the test, only four of the School information topics were not requested by users.

CONCLUSION

As for the design and construction of educational components, the project was largely, but not wholly successful. On the positive side, components were designed which met the design specifications, providing legitimate and negotiable linkages between occupational information and information about diverse educational programs and schools in various sectors of the industry. Where the project ran into problems was in the area of data; less was available and its quality was lower than expected.

The Career Information System staff concluded from this project that

1) Indirect linkage of occupations and educational programs is best. Categorizing educational programs in educational rather than occupational categories does more justice to their diverse purposes and reduces the implication of specious relevance to jobs. (As will be seen later, it is also functional from the user's point of view.)

2) Preparation, Program, and School files provide a workable structure for essential educational information while also permitting the enrichment of essential data with related facts.

3) Existing data sources are inadequate, both in topics and accuracy. Government reports, directories, and school catalogs must be verified and supplemented by cross-checking and direct surveys of institutions. Despite the many reports required of schools, they do cooperate in providing information for career planning.

4) There are still topics which cannot be incorporated. These include, for example, campus environment for which there is not adequate conceptualization, and others, including various outcome measures for which there are no established or readily accessible data sources.

CHAPTER III

PROJECT EVALUATION PROCEDURES

SEVERAL EVALUATION PROCEDURES USED

CIS information is routinely evaluated for quality and accuracy. As noted previously in Chapter I, advisory committees, comprised of contact people in post-secondary educational institutions and specialists from educational planning agencies in the state, review the information included in the Educational Components, not only for information gaps but also for accuracy.

Beyond the evaluative activities integral to system design and development, systematic evaluation has occurred in two areas: (1) pilot testing the expanded CIS with user populations, and (2) testing the feasibility of alternative schemes for providing the expanded system with new, non-school populations.

Pilot Testing Done with Several User Groups

In the summer and fall of 1974, the expanded CIS was pilot tested in eight high schools, three community colleges, and two four-year colleges to assess aspects of system usability for existing user groups. In addition, the System was tested in four shopping centers in metropolitan Portland to assess system applicability with non-school adult populations, and in the Oregon State Penitentiary and Oregon Correctional Institution to determine applicability for correctional institution inmates.

Several Research Questions Isolated

The major research questions addressed in pilot testing were a reflection of the primary goals of the Educational Components Project. The pilot testing attempted to determine:

I. The accessibility of the System
   A. What types of people used the System?
   B. How did System users learn about the System?

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[1]Over 30,000 high school and community college students were utilizing the CIS occupational information when the Educational Components Project began in August, 1973. Since that time, the number has grown to 142,000 in addition to 20,000 users from four-year colleges and various social service agencies.

II. The ease of system use
   A. How easy to read and understand is the information supplied by expanded CIS?
   B. How readily do users learn to follow operating instructions supplied by the System?
   C. Can users manipulate the System to fit their individual needs?
   D. Do the mechanics of using the System discourage users from accessing the information files?
   E. Do users' ratings of System ease vary according to subgroup?

III. The integration of occupational and education information
   A. Do users make conceptual linkages between the occupation and education files?
   B. Do users access the information files in any particular order?
   C. Do users making more conceptual links alter their career and educational plans more than users making fewer links?
   D. Which variables influence how many conceptual links users make?

IV. The relevance of the information to personal career and educational goals
   A. To what extent is the information provided by the System relevant to the users career decision-making needs?
   B. Are some information files more relevant than others?
   C. Does the relevance of the System vary according to subgroup?

V. The completeness of information
   A. To what extent is the information available through the expanded CIS complete?
   B. Do users gain knowledge about their career and educational interests from using the System?
   C. Do users' ratings of the completeness of the information vary according to subgroup tested?

VI. The impact of the information
   A. Does the information change users' first choice career and school?
   B. Does the information give users new job ideas?
   C. Does the information change users' certainty about their career and educational choices?
   D. Does the impact of the information vary according to subgroup?

Market Testing Done with Shopping Center Patrons

Another major objective of the project was to determine feasible approaches to expanding accessibility of the System to non-school populations. Market testing activities have included research into pricing, marketing, and delivery alternatives that could facilitate service to greater numbers of the non-school population as well as determining what subgroups of that population can benefit most from System use.

CHAPTER IV

FIELD TEST EVALUATION

By Mike McKeever

INTRODUCTION

Field Test Results Important

The only reliable way to test the effectiveness of an information system is to make it available to people and let them use it. By studying factors such as who uses the system, how they use it, and how users rate the quality of the system, meaningful conclusions concerning the value of the system can be arrived at. The CIS staff conducted an extensive field test of the expanded Career Information System to gather such data. The test covered a period of five months and included eight high schools, three community colleges, two four-year colleges, five shopping centers, and two correctional institutions. The findings provide a good basis for an evaluation of how successfully the System meets a number of very important objectives.

User Groups Respond Uniformly

The Career Information System was tested in two traditional settings, high schools and community colleges, as well as in two new locations, shopping centers and correctional institutions. Shopping centers were chosen as an attempt to reach out-of-school adults, such as women reentering the labor force or considering additional education, persons unhappy in their present jobs and looking for alternatives, and unemployed persons. Correctional institutions were chosen to test the relevance of this information to inmates who needed to decide what career to pursue after their parole.

Using data obtained from all four groups of users, this report evaluates the quality of the Description, Preparation, Program and School files in six major dimensions: 1) who used the material and how users learned about the Career Information System, 2) how easy the new material is to use, 3) how completely or adequately it covers the designated subject matter, 4) how relevant it is to students' needs, 5) how well the new material integrates with the rest of the Career Information System, and 6) what degree of impact the System has on users' career-planning processes. The field test was designed to include our seemingly diverse groups of people to determine whether users' perception of the System's utility and quality would vary; for example, whether service to adults would be improved at the expense of students. After applying a number of standards such as age, sex, educational standing and family income, the data indicate that in all six categories the effect of these variables on users' impressions of CIS was either very slight or occurred for a good reason.

Accessibility. In addition to the obvious fact that age, family income, and educational standing were very likely to vary depending on the test site, it was discovered that shopping center and four-year college users learned of the Career Information System through different channels than high school, community college and correctional institution users. This is no doubt explained by the differing amounts and types of media advertising used at the different sites.

Ease of Use. Users were asked to rate the System according to the overall ease with which it could be accessed and utilized. The statistics indicate that men found the System easier to use than did women, but the difference is insignificant.[1] Educational standing had no significant effect, as users attending school at the time of the evaluation found the System insignificantly easier to use than users not in school at that time.[2] Neither did differences in family income create a statistically significant variation in how easy people thought the System was to use.[3] The same was true of the age variable as older users judged the System no harder to use than did younger users.[4]

Adequacy. Users were asked to judge how completely or adequately the material covered the subject matter. In other words, did the files tell users what they wanted to know about the subject they were pursuing? Men found the information slightly more adequate than did women,[5] although women gained more knowledge from using the System than men. The variables of educational standing,[6] family income,[7] and age[8] did not produce significant variations in the responses.

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[1]Men = 3.82; Women = 3.74; On a five-point scale men rated the System two percent easier to use.

[2]Not in school = 3.73; In school = 3.81; On a five-point scale users in school rated the System two percent easier to use.

[3]$r = .258$; $n = 26$; $p \leq .101$

[4]$r = .063$; $n = 147$; $p \leq .223$

[5]Men = 3.84; Women = 3.63; On a five-point scale men rated the System six percent more adequate.

[6]Not in school = 3.75; In school = 3.79; On a five-point scale users in school rated the System one percent more adequate.

[7]$r = .003$ $n = 272$ $p \leq .482$

[8]$r = .044$ $n = 544$ $p \leq .152$

Relevancy. Users were also asked to evaluate the System according to how relevant it was to their educational and career-planning processes. The results to this inquiry were similar to those concerning ease of access. Sex,[9] educational standing at the time of the evaluation,[10] family income,[11] and age,[12] had no statistically significant effect on users' judgment of the relevancy of the information.

System Integration. The variables of age[13] and educational standing[14] did affect how well users integrated the new information files into the total Career Information System. Examination of these variables indicates, however, that they are not a limitation of the expanded System but rather a function of past System usage rates.

Impact. The System's impact on users' career-planning processes was sometimes related to the test site under consideration[15] but these relationships were quite insignificant.

These data speak highly for the System's ability to provide meaningful career information to a broad range of clientele. This is an extremely important finding. Major alternatives in the System would have been necessitated had its worth been limited to a distinct group of people. The fact that the response was so homogeneous allows us to analyze users' responses as a whole rather than by subgroup. Statistics found later in this chapter are combined totals for all people who used CIS during the testing period, unless stated otherwise.

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[9]Men = 3.92; Women = 3.79; On a five-point scale men rated the System three percent more relevant.

[10]Not in school = 3.98; In school = 3.86; On a five-point scale users rated the System three percent more relevant.

[11]$r = .037$; $n = 45$; $p \leq .504$

[12]$r = .082$; $n = 248$; $p \leq .100$

[13]$r = .085$; $n = 724$; $p = .011$

[14]Not in school = 0.9125; In school = 1.1234; Out of a total of five possible links, users in school made 23 percent more links.

[15]See section on Impact in this chapter for statistics.

USERS LEARN OF CIS FROM VARIETY OF SOURCES

Most Field Test Users Unfamiliar with CIS

Of all the users surveyed in the evaluation, about two-thirds (64.6 percent) had some previous knowledge of CIS before the time they used it, but less than one-fifth (18.3 percent) of them had used it once or twice before. Those having already used the System were almost exclusively high school or college students. Those users who had known of the System before had learned of it relatively recently. Over half (53.6 percent) had first learned of the System within the preceding month.

Most Users Learn about CIS from Personal Sources

By and large respondents had learned about the Career Information System from another person. The majority (59.4 percent) had been told about it from friends, counselors, instructors, or members of the family. The rest learned in about equal numbers either from the mass media (19.2 percent) or from happening upon the terminal by chance (21.4 percent).

The ways in which users first heard about the System do differ for the various user groups, but most of these differences would seemingly be accounted for by the amount of advertising in and around the test sites during the evaluation period. The mass media played a larger role in telling people about the CIS services in the shopping centers and in the four-year colleges than in community colleges and high schools. Only in high schools was a formal personal source, usually a teacher, the primary source, while informal referrals from friends and relatives were important for all four groups. Table 2 below shows these differences.

Table 2

How System Users First Learned
About the Career Information System

	Happened By	Mass Media	Informal Person	Formal Person
General Public	30.8%	34.1%	24.5%	10.6%
Four-Year Colleges	5.3	21.1	36.8	36.8
Community Colleges	39.0	3.4	13.6	44.1
High Schools	2.1	3.6	24.3	70.0

$n = 426$; X^2 sig. at $p \leq .0001$

Summary

Most participants in the field test had not previously used the Career Information System. Most users discovered CIS through personal sources although the mass media was an important source for shopping center users.

CIS EASY TO USE

Easy Access Important

A career information system must provide high quality information in an easily accessible format. It is imperative that potential users not be deterred from accessing all or part of a system because it is too difficult for them to use. The most effective information system will be of little value if the mechanics of utilizing it do not facilitate its use.

The question of utility was of particular interest in this field project because instead of everything being organized into files with occupational codes, there were now three types of information files. The Description and other occupational files remain the same but added to it were a Program file that lists post-secondary educational programs which relate to an academic field or training area, and a School file that provides detailed information on such items as admission requirements, programs of study offered, housing available, and cost and financial aid for post-secondary schools. A study conducted at Churchill High School on the original Career Information System showed that 95 percent of all users rated the System easy to use.[16] Considering the major expansion of the amount and type of information provided by the new materials in the System, the possibility that confusion and misunderstanding also would be expanded was a very real concern. Fortunately the data indicate that the System was successfully expanded without making it more difficult to access. Users' ratings of how easy the new System was to use compare very favorably with how they judged the old System on this subject.

The utility of the individual files as well as that of the total System will be examined here. The four principal files, Description, Preparation, Program and School are designed to integrate educational information in a logical sequence with occupational information.[17] Two objectives were outlined to maximize the usefulness of both the new and existing files. First, the new files were designed to be systematically related to the files already in the System. Second, all files needed to be individually accessible so that a user who wants only education program information need not take occupational information or vice versa. The evaluation data indicate that the System did adapt well to the individualized needs of its users.

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[16] Bruce McKinlay and Daniel Adams, Evaluation of the Occupational Information Access System as Used at Churchill High School (Eugene, Oregon: Bureau of Governmental Research and Service, University of Oregon, 1971), p. 13.

[17] See p. 40 for a discussion of this topic.

All Files Easy to Use

People responded to questions asking them how easy each individual file was to use. Although the sample size for this question was not large,[18] the response from those users who did answer was very encouraging. A full 100 percent of those questioned felt that the Description, Preparation, and Program files were either easy or very easy to use. Ninety and nine-tenths percent viewed the School file as easy or very easy to use while the remaining nine and one-tenth percent stated that the file was hard or very hard to utilize. It should be noted that the tabular format of the School file does make it more difficult to use than the other files. The fact that over nine out of ten users found it easy to use is very encouraging.

Users were also asked to assess the overall utility of the System. Seventy percent of those responding said the total system was easy or very easy to use.

Another encouraging finding was that those who had used the System before the addition of the new files found it no easier to use than those receiving their first exposure to CIS.[19] This would indicate that the instructions and format of the material are clear enough that first time exposure to the expanded System is sufficient for the person to comprehend how he or she can use it. One of the original goals of CIS was to provide a highly individualized learning tool which demanded a minimum amount of staff time. It appears that the System can be significantly expanded without losing that characteristic.

Users Make Few Mistakes

One of the objectives of any information system should be to present high quality information in a format simple enough to enable the user to concentrate on the content of the system and not on the mechanics of it. Ideally the user's perception of the quality of the information should not be negatively influenced by confusion or misunderstanding generated by the System's design. There is good evidence that the Career Information System meets this objective.

Each user's computer print-out was scanned and the number of operational errors made during the course of the program were counted. Operational errors include such things as typographical errors, requesting a school number from an occupation file, or typing an answer to the wrong question.[20] It is a reasonable hypothesis that the more errors a person makes, the more difficult the System is for that person to use, and hence the greater the possibility that his or her perception of the System's quality would decline. However, it

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[18] DESC n = 84; PREP n = 60; PROG n = 55; SCH n = 33.

[19] $r = .015$; $n = 88$; $p \leq .445$

[20] The System is designed so that errors do not disrupt the program. Instead, they trigger messages to help the user make a valid command, e.g., "I CANNOT UNDERSTAND THAT RESPONSE; PLEASE REPLY AGAIN, IF YOU ARE ANSWERING QUESTION 22, REPLY WITH YES, NO OR NP."

was found that users' perceptions of both System adequacy and relevance were not affected by the number of operational errors they made. The actual number of errors that users made was very low. Over half of the users (50.2 percent) made no errors at all and nearly nine out of ten (89.5 percent) made three errors or fewer. This is one indication that the System is structured so that the mechanics of using it do not deter people from discovering and making use of the information in the files. While some users made more errors than others, very few made so many mistakes that they became frustrated or disenchanted with the System.

System Adapts to Individual Needs

As stated above, the files are designed to be used in a logical succession, the information in one file leading the user to access information in the next file. But it is also important that the System design be such that it does not cause the user to believe that he or she must access the information in all of the files if he or she desires information in only one or two of the files. The content and means of accessing each individual file must be clear enough to enable the user to pinpoint and utilize those parts of the System which are specifically relevant to his or her needs. In other words, the user should be able to enter the System at any linkage or file with ease. This was not a problem which the original CIS had to deal with since it contained only occupational files.

One way to assess the success of the System in meeting this criterion is to examine whether users found it easier to use the files in any particular order. In other words, do users find it easier to use the files in the order in which they are presented than to use only those files which contain information pertinent to their current interests? The data indicate that users manipulated the System to fit their individual needs with relative ease. Users accessing QUEST found the System no easier to use than users who went directly to the information files.[21] The same was true for each of the other files as users accessing any or all of the Description,[22] Program,[23] Preparation,[24] and School[25] files found the System no harder or easier to use than users not accessing those files. Clearly users find it easy to use the segments of the System which they desire. They are not compelled by the mechanics of the System to use the whole System or to use it in any particular order.

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[21]Didn't use QUEST = 3.73; Did use QUEST = 3.81; On a five-point scale users who did use QUEST rated the System two percent easier to use.

[22]Didn't use DESC = 3.64; Did use DESC = 3.81; On a five-point scale users who did use DESC rated the System four percent easier to use.

[23]Didn't use PROG = 3.81; Did use PROG = 3.77; On a five-point scale users who didn't use PROG rated the System one percent easier to use.

[24]Didn't use PREP = 3.81; Did use PREP = 3.77; On a five-point scale users who didn't use PREP rated the System one percent easier to use.

[25]Didn't use SCH = 3.81; Did use SCH = 3.71; On a five-point scale users who didn't use SCH rated the System three percent easier to use.

SYSTEM ADEQUATE, COMPLETE

Information Must Be Comprehensive

How completely and comprehensively the System covers its designated subject matter is not an easy characteristic to define and measure. Essentially the analysis here boils down to whether the System does or does not provide most of the information that users desire. The pilot test of the expanded CIS provided evidence that all of the new files are comprehensive and important. Two sources of data bear on this issue. First users rated the information in each file very high. Second a knowledge test administered to high school students showed them learning from use of the System.

Users Say All Files Give Complete Information

Users indicated that they felt the information in all four files covered its subject matter very completely. It told them what they wanted to know. The Program, Description and Preparation[26] files enjoyed the greatest success with close to nine out of ten users (90.0 percent, 86.6 percent and 85.0 percent respectively) who accessed these files indicating that the files gave them most or all of the information they desired. The School file was not far off the pace with over three-fourths (77.2 percent) of its users saying they received most or all of the information they desired. It seems evident that the scope of the information is sufficient to satisfy users' interests in the specific subjects covered in the files.

Users assessed the adequacy of the total System at a lower level than they did the individual files. Less than six out of ten (56.5 percent) users stated that the System gave them most or all of the information they wished with an additional third (32.3 percent) saying it gave them some of the needed information. A little over one in ten (12.2 percent) indicated that they received little or no appropriate information from the System. There is probably a good reason why people assessed the adequacy of the total System lower than that of the individual files.

Many users accessed only some of the files, and when asked to assess the completeness of the total System they were rating, at least in part, information which they had not used. They would be expected to give this information a lower rating than that with which they were familiar. The data may indicate that users who rated the total System lower in completeness desired to see additional files included in the System, rather than more detailed information added to the existing files. This is certainly not an unfavorable indication.

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[26]Preparation file was incomplete during part of the test.

Heavy Usage Increases Adequacy

The data strongly indicate that the more a person uses the System the more adequate he or she perceives it to be. Users accessing the Description,[27] Preparation[28] and Program[29] files rated the System's completeness significantly higher than those not using those files. The statistics also show that the more files a user accesses the higher his or her rating of the System's adequacy. This finding is important from another perspective as well, for it suggests that the addition of each of the educational files increased the adequacy of the System for a large number of users, including both youth and adults.

Knowledge Tests Administered

A second way to measure the completeness of the information provided by CIS is to measure how much users learned about their particular career interests from using the System. This function of CIS was investigated in a sub-sample of high school users. Measures were taken before and after System use, tapping the extent of knowledge the user had about his or her first choice career and his or her first choice school. The items were designed to be appropriate to whatever career and whatever school the user was most interested in.[30] To avoid asking users to complete a tremendously lengthy questionnaire, it was decided to directly test knowledge gained for only the Description and School files. While this procedure was less advantageous than testing all four files, it does provide useful information on the two main subject areas of the System--careers and education.

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[27]Did use = 3.8765; Didn't use = 3.2587; On a five-point scale those using the DESC file rated the System 19 percent more adequate.

[28]Did use = 4.0304; Didn't use = 3.6378; On a five-point scale those using the PREP file rated the System 10 percent more adequate.

[29]Did use = 3.9800; Didn't use = 3.6841; On a five-point scale those using the PROG file rated the System eight percent more adequate.

[30]The test included such questions as:

"Preparation for this occupation usually includes an apprenticeship

1. _____ True
2. _____ False
3. _____ I Don't Know."

"The employment outlook for this occupation in Oregon is currently:

1. _____ Shortage of Workers
2. _____ Balance of Workers and Jobs
3. _____ Surplus of Workers
4. _____ I Don't Know."

Users Gain Knowledge about First Choice Occupations and Schools

The before-and-after design allowed the calculation of change in knowledge scores for each respondent. These change scores do not indicate the actual level of knowledge of the individual user, but denote the amount that the user learned about his or her first choice job and school from the Career Information System itself. Table 3 below summarizes the change effected by using the Career Information System on users' knowledge of their first choice occupations. Overall, more than three out of five high school students scored higher on a simple test of occupational knowledge about the jobs they had been considering most seriously. About a quarter of the users did not change the number of questions they could answer correctly after using the System. About one in nine users scored lower after using the System than before using it.

Table 3

High School Users Changing Extent of Knowledge of First Choice Occupation

Increased Knowledge	No Change	Decreased Knowledge
61.4%	27.2%	11.4%

n = 44

Overall, the high school students showed an average increase in knowledge of 16.7 percent.

Somewhat fewer students increased their knowledge of their first choice school from using CIS. As Table 4 shows, half of the users scored better after using the System than they had before.

Table 4

High School Users Changing Extent of Knowledge of First Choice School

Increased Knowledge	No Change	Decreased Knowledge
50.0%	28.6%	21.4%

n = 28

Overall, users in the high school sub-sample increased their knowledge of their first choice school by 10.3 percent.

Repeat usage is a predominant pattern in institutions where the System is continuously available, with second and third uses consisting mainly of file inquiries. Thus, one should expect to see the average number of accesses rise above those shown in this test.

All Files Rated Relevant

In another attempt to measure relevance, users were asked to rate how relevant the information they used was to their own career-planning needs. The results were highly favorable. Nearly eight out of ten (79.7 percent and 79.2 percent respectively) rated the DESC and PREP files as either mostly or very relevant. The PROG and SCH files enjoyed similar success with approximately three-fourths of their users rating them mostly or very relevant (75.4 percent and 74.6 percent respectively). When asked to rate the relevancy of the total System, over six out of ten (63 percent) rated the System mostly or very relevant.

Of particular interest was the group of largely non-school adults who used the Career Information System in shopping centers. A full 85 percent of these users stated that they were planning on attending school in the future and 38 percent were seeking employment. Approximately half of these users were men. Over 60 percent of these adults indicated the System gave them all or most of the information they desired. The pilot test demonstrated that there is strong interest in education among adults and CIS assists their planning.

Heavy Usage Increases Relevance

The data indicate a strong relationship between the degree of System usage and how relevant a user rated the System. The more the user used the System the more relevant the information seemed. Users who accessed the DESC file found the System more relevant than those who did not.[32] The same was true of the PREP[33] and SCH[34] files. The findings support the theory that the more files a user accessed the greater his or her perception of the System's relevance. Also, the greater the number of entries a user made in the files the greater his or her perception of the System's relevance.[35] Thus, it is important that users' access to the computer not be restricted.

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[32]Did use = 4.0265; Didn't use = 3.4483; On a five-point scale those using the DESC file rated the System 16 percent more relevant.

[33]Did use = 4.0940; Didn't use = 3.7401; On a five-point scale those using the PREP file rated the System nine percent more relevant.

[34]Did use = 4.1504; Didn't use = 3.8707; On a five-point scale those using the SCH file rated the System seven percent more relevant.

[35]$r = .181$; $n = 192$; $p = .006$

Summary

The total System, as well as each of the four files, appears to be highly relevant to users' career-planning needs. Patterns of usage indicate that the new educational files are being frequently used while the occupational description file remains the most popular on first usage. Clear majorities rated all four files as mostly or very relevant and over six out of ten users put the relevance of the total System in these same two categories. The more of the System that the user accesses the more relevant he or she feels it is. This is true for the number of files used and the number of entries per file.

SYSTEM WELL INTEGRATED

System Designed to Integrate Occupational and Educational Information

The four major CIS information files are designed to be part of an integrated system where a person can move easily from one part to another. That is, the parts are not only supposed to be valuable when used separately, but when taken as a whole they should present the user with a coherent pattern of information relating to his or her career and educational goals. Many choices of post-secondary educational programs are closely connected with career related factors. Thus, it is important that people have an information system at their disposal which effectively integrates occupational and educational information. The educational components were designed to provide this capability for CIS users, and the pilot tests provide an evaluation of the approach used. One way of discovering whether CIS meets its objective is to evaluate the frequency and type of conceptual linkages which users make between the CIS files.

Definition of a "Link" Between Files

When a user follows the title of an occupation suggested for consideration by the QUEST program to one of the information files, and calls for information concerning that occupation, the individual can be said to have made a "link" between the QUEST list and that information file. Tracing such links from file to file offers an analysis of the patterns of usage that emerged from this field test of the Career Information System.

Suppose, for example, that a user received on his or her list of occupations in QUEST the titles "Teacher", "Social Worker" and "Counselor" and then accessed from the occupational description (DESC) file a description of the work that a "Social Worker" does. The user, we infer, has made a conceptual link between the System's files in pursuing his or her interest.

A greater proportion of female students learned from the System than their male counterparts, with 62.5 percent of the women showing a knowledge gain as compared to 55.5 percent of the men.

Summary

The information in the System appears to cover its designated subject matter very completely. Users indicated very strongly that the individual files gave them the information they desired on that particular subject. The more a user became acquainted with the System, both in terms of number of files used and number of entries per file, the higher he or she rated the System's adequacy. Knowledge tests administered before and after System usage show that users increased their knowledge of information pertinent to their first choice job and school by using the System. Comparing the increase in knowledge about first choice schools with increase in knowledge about first choice occupations, it appears that the occupational materials have more instructional power, though more research will be required to confirm this result.

SYSTEM RELEVANT TO USERS' CAREER AND EDUCATION PLANS

Information Must be Pertinent to User Needs

There is no single, clear-cut way to determine how effective an information system is. Besides appearing to be complete and educational, an information system should provide career information which is directly pertinent to the needs of its users. The system can be considered effective if it provides relevant information on decisions which users are making. Patterns of usage during the pilot test give one clue as to how well the varying types of information in the four principal files of CIS coincide with users' interests and needs. A second, more direct, indication results from users' responses to the question "How personally relevant was the information to your career planning needs?" The findings support the conclusion that each of the four files, as well as the total System, successfully provide information which goes to the heart of users' career information needs.[31]

Use Patterns Show Educational Files Important

The first indication of how relevant the four information files are to users' needs can be seen in the use patterns established during the evaluation period. Practically nine out of ten users (88.1 percent) accessed at least one of the information files. For most users (82.7 percent) it was their first exposure to CIS, so they were totally unfamiliar with all of the files. The remainder were familiar with the occupational files from previous usage. Still nearly half (44.9 percent) of all users accessed at least one entry from

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[31]Another excellent indication of this information system's relevance can be found by measuring the impact it has on its users' career choice. This data is found in the discussion of "System Alters Users' Career and Education Plans," on pp. 44-48.

the new educational files. This is an early indication that users perceive the educational files as well as the occupation files to be important to their career planning.

While the addition of the educational file had a number of positive effects, it did not radically alter traditional use patterns for the System. Even when faced with a choice of several information topics, more than nine out of ten (91.2 percent) people who used the information files chose the occupational description (DESC) file first. And over four out of five using the System accessed at least one entry from this file. Table 5 below shows the percentages of users accessing the four information files.

Table 5

Percentage of All System Users
Accessing Four System Files

Description File	Preparation File	Program File	School File
83.8%	35.4%	33.8%	11.1%

n = 683

Another important measure of use patterns is how many entries per file were accessed. The DESC file received the greatest usage; the average person who used the file requested two or three (2.54) job descriptions. While the number of inquiries was less for the other three major files, it was still high enough to indicate substantial user interest. Table 6 below indicates this pattern of usage.

Table 6

Average (Mean) Number of Accesses Made
of the Four CIS Files by Users
Accessing that Particular File

Description File	Preparation File	Program File	School File
2.54	1.41	1.71	1.69
n = 570	n = 252	n = 231	n = 76

Table 7 below displays the percentages of users making various numbers of such links between files. A very high percentage, about seven out of every ten users, made at least one conceptual link between the files.

Table 7

Conceptual Links Between the CIS Files

No Links	One Link	Two Links	Three Links	Four Links	Five Links
29.2%	36.0%	20.5%	11.6%	2.2%	.5%

n = 683

It is not easy to establish a statistical base from which accurate conclusions can be drawn about the meaning of linkages made between pairs of CIS files. A certain percentage of people (approximately 30 percent according to Table 7) made no conceptual links between the various files. This is not, however, to say that these people did not realize the existence of such a conceptual link. It is entirely plausible that these users understood how the System's files were integrated (linked) and didn't access additional files because they were uninterested in the information at that time, had used one of the files previously, were pressed for time, or for a myriad of other possible reasons. So a different statistical base is demanded which will give a clearer picture of how successfully the four files have been integrated.

For every possible combination of two files, it can be determined how many users accessed both of those files. By taking the total number of users who accessed these various pairs of files, it can be determined how many did so in a direct sequence, or link, and how many did so by an indirect means. For instance, the user who accessed related subjects in the PREP, PROG, and SCH files in that order has made a link from PREP to PROG, and from PROG to SCH, but not from PREP to SCH. The total number of people accessing the two files, rather than the total number of CIS users, will be used as the denominator in analyzing the number of direct links CIS users made between each combination of files.

Users Follow Pattern of Conceptual Links

Users followed a definite pattern of conceptual links when they used CIS. Table 8, which follows on the next page, shows the emergence of this pattern.

Table 8

Percentage of Users Using Both Files Making
At Least One Conceptual Link Between Them

		To: QUEST List	DESC File	PREP File	PROG File	SCH File
From:	QUEST List		70.6%	2.3%	5.2%	****
	DESC File	1.7%		95.3	30.2	****
	PREP File	.6	3.0		79.6	****
	PROG File	1.3	2.9	1.4		67.2%
	SCH File	0.0	6.6	4.3	5.2	

Users moved from the QUEST list of occupations to the DESC file over 70 percent of the time, many times more often than with the PROG or PREP files. Most encouraging for the purposes of this evaluation are the strong links established between the DESC file and the new educational components. Over 19 out of 20 users who accessed the DESC and PREP files made direct links between them. Nearly four out of every five users accessing both the PREP and the PROG files did so directly, or by conceptually linking the two files. Finally, about two-thirds of the users accessing both the PROG and the SCH files conceptually linked the two of them. A link of secondary strength occurred between the DESC and PROG files where 30.2 percent of all users accessing both files made a direct link between them without the aid of PREP.

The fact that users quite frequently made conceptual links between the files had two very tangible results. The more links a user made, the more certain the individual became about his or her first choice occupation.[36] Similarly, the more links a user made the more certain he or she became about his or her first choice educational program.[37] Although the level of statistical significance is less than definitive, it appears that the System is creating the sort of recognizable impact on users which one would expect from a well integrated career information system. In light of the above statistics

[36] $r = .089$; $n = 419$; $p = .034$

[37] $r = .131$; $n = 229$; $p = .024$

it is not surprising that users' ratings of the System's adequacy[38] and relevance[39] also increased with the number of links made.

Some Users Make More Links Than Others

There was a tendency for some kinds of users to make more conceptual links between files than other users. Men made more links than did women.[40] Users who were not, at the time of the evaluation, enrolled in any kind of school made more links than did users then attending school.[41] Older users and users with more years of formal education made more conceptual links between files than the younger,[42] less educated users.[43]

These findings take on a clearer meaning when combined with yet another statistic: users who had used the original Career Information System more often made fewer conceptual links between files during the pilot test.[44] An examination of the use made of the System by users with a greater number of prior exposures shows a specific use pattern.

A reasonable hypothesis to explain why different groups of people made more links can be developed. After an initial session with the System, wherein its various capabilities are examined, users return with a very few, specific requests to make of the System. In these cases, fewer links are made since fewer file entries are accessed during a single session. Since the System is a permanent part of most high schools in the state, the users who are most familiar with the System, and who, therefore, constitute the users making more specific requests for information, are younger, less educated, and in school. The sex difference remains unexplained.

Summary

A large percentage of users, over 70 percent, made one or more conceptual links between the files. Among those making such links, a clear usage pattern developed. These users tended to move from QUEST to the DESC file and then on to the PREP, PROG, and SCH files in that order. Those users who made a greater number of links increased the certainty of their first choice occupation and program and rated the System more relevant and adequate. Taken in sum, the results indicate that the System successfully integrates career and educational information.

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[38] $r = .330$; $n = 548$; $p = .001$

[39] $r = .239$; $n = 251$; $p = .001$

[40] Men = 1.1081; Women = 0.8873; Out of a possible five links, men made on the average 24 percent more links.

[41] Not in school = 0.9125; In school = 1.1234; Out of a total of five possible links, users in school made 23 percent more links.

[42] $r = .085$; $n = 724$; $p = .011$

[43] $r = .109$; $n = 723$; $p = .002$

[44] $r = .073$; $n = 481$; $p = .050$

SYSTEM ALTERS USERS' CAREER AND EDUCATION PLANS

Impact on Users' Plans Desirable

There are no conventional approaches to understanding the impact of a service like CIS. Since it is an information system, it is reasonable to look for impact on decisions. Thus, this study undertook to measure the effect of system usage on people's choices of occupations, educational programs, and schools. Users were asked a number of questions both before and after System use in an attempt to isolate what impact CIS has on its users. The results indicate that the System produced a measurable impact in a number of important areas.

One of the goals of the System is to supply users with information which will aid them in the selection of an occupation, a program preparing them for that occupation when appropriate, and a suitable post-secondary school having such a program. The extent to which users changed the occupation, program or school in which they were most interested from before using the System to after using it can be taken as an indication of the System's success in reaching that goal.

Many Change First Choice Career, Program and School

Of all users measured on these dimensions during the evaluation, nearly three out of every ten changed the occupation they reported being most interested in after using the Career Information System. Users in the general public changed a little more often than average: correctional institution users changed a little less (See Table 9 below).

Table 9

Users Changing First Choice
Occupation After Using System

	General Public Users	High School Users	Community College Users	Correctional Institution Users	All Users
Changed	34.0%	26.4%	21.4%	19.1%	29.2%
Unchanged	66.0	73.6	78.6	80.9	70.8
	n = 220	n = 90	n = 14	n = 68	n = 392

The educational and/or training programs in which users were most interested as they started to use the System proved even more susceptible to change. Over a third of the users changed their program of greatest interest

as a result of using the System. Here again, users in the general public changed the most of the four user groups (See Table 10 below).

Table 10

Users Changing First Choice Programs After Using System

	General Public Users	High School Users	Community College Users	Correctional Institution Users	All Users
Changed	41.9%	32.4%	22.2%	26.2%	35.8%
Unchanged	58.1	67.6	77.8	73.8	64.2
	n = 105	n = 34	n = 9	n = 42	n = 190

Users' choice of schools changed least, as a result of System use. Only about one in ten users changed the school they reported being most interested in. Among the users in the correctional institutions, an even smaller percentage changed their first choice school (See Table 11 below).

Table 11

Users Changing First Choice Schools After Using System

	General Public Users	High School Users	Community College Users	Correctional Institution Users	All Users
Changed	12.8%	12.5%	none	2.6%	10.5%
Unchanged	87.2	87.5	100.0%	97.4	89.5
	n = 133	n = 56	n = 11	n = 38	n = 238

New Job Ideas Offered

One final measure of the effect of the Career Information System on users' career-planning processes is the number of users who actually got new occupational ideas from the System. This question is distinct from those pertaining to change in first choice occupations because here the user has discovered a totally new occupation he or she would like to explore. Nearly half (49.7 percent) of the users indicated that they had indeed received a new job idea from the System.

Users Change Certainty of Choices

In interpreting the foregoing data on changes in first choice occupations, programs and schools, one should remember that the user does not come to the Career Information System devoid of any notion of his or her interests, or of any knowledge of potentially relevant schools or programs. Many users have some idea of what they would like to do, but are not very committed to their choice. The Career Information System can serve, then, not only to supply the user with new ideas, but also to confirm the tentative decisions that he or she presently holds. Indeed, the System was found to have an effect on the degree of certainty with which users held their occupation, program and school decisions. Table 12 below shows the percentage of users changing the certainty with which they held these decisions from before to after using the System.

Table 12

Users Changing Certainty of First Choice Occupation, Program and School

	General Public Users	High School Users	Community College Users	Correctional Institution Users	All Users
First Choice Job	35.3%	34.4%	21.4%	22.5%	32.5%
First Choice Program	34.4	38.5	11.1	36.2	34.6
First Choice School	30.7	32.2	18.2	14.6	27.7

This data includes users who changed their first choice occupation, program or school as well as those who didn't. Over a quarter of all users changed their degree of certainty about their choice of post-secondary schools. About a third of all users changed in the certainty of their occupation and program decisions.

Note that the above table does not indicate the direction of these changes in decision certainty. The System had the effect of increasing the degree of certainty in some users, and decreasing it in others. It should not be assumed, however, that an increase in choice certainty is necessarily desirable, and a decrease objectionable. One of the most beneficial effects of a system such as this might be to challenge a user's tentative decisions; to make the individual stop and think again about career goals and educational plans. A drop in certainty might well reflect this System effect.

Table 13 below displays the percentage of System users who, during the evaluation, increased and decreased their certainty on the three decisions investigated. Overall, users increased the certainty they felt in their decisions more than twice as often as they experienced a decrease in certainty. The System would seem to have a more confirming effect on occupational choice decisions than on program or school decisions.

Table 13

Increasing and Decreasing Certainty
of First Choice Occupation, Program and School

	First Choice Occupation	First Choice Program	First Choice School	All Choices
Increasing	25.3%	22.3%	17.9%	22.3%
Decreasing	7.1	12.3	9.9	9.2
	n = 419	n = 229	n = 274	n = 922

This pattern is fairly stable across the different types of users examined during the evaluation. Table 14, which follows on the next page, breaks up the summary percentages by user type.

Table 14

Users Increasing and Decreasing Certainty of First Choice Occupation, Program, and School

		General Public Users	High School User	Community College Users	Correctional Institution Users	All Users
First Choice Occupation	Increase	29.5%	22.6%	14.3%	16.9%	25.3%
	Decrease	5.8	11.8	7.1	5.6	7.1
First Choice Program	Increase	22.9	28.2	none	20.0	22.3
	Decrease	11.5	10.3	11.1	16.0	12.3
First Choice School	Increase	20.9	17.7	none	12.5	17.9
	Decrease	9.8	14.5	18.3	2.1	9.9

Summary

The field test gave several indications that the Career Information System has a significant impact on its users. Many users changed their first choice occupation, program and school, with the program category being the most often changed and the school category changed the least often. A solid half of the users received new occupational ideas from the System. Users also changed the degree to which they were certain of their first-choice job, program and school. Most users increased their certainty although for some the System decreased their confidence in their original choices.

CONCLUSION

The field test indicates that the expansion of the Career Information System improves the quality of the System in a number of very important dimensions. It is valuable to people of varying ages, sex, family income and educational standing. The expanded System is very easy to use, even though its subject matter has been doubled. Users feel free to use the major information files individually, but also are comprehending the logical pattern of conceptual linkages around which the System was designed. All major files are very relevant to users' personal career planning needs. Users say the files also cover their individual subject areas very completely, and increase users' knowledge of their career and educational choices. Perhaps the strangest finding uncovered by this field test was that the expanded Career Information System produces a measurable impact on users' career plans, sometimes leading them to change their first-choice career, program or school, sometimes giving them a totally new career idea to pursue, and sometimes altering the individual's certainty that his or her career and educational choices are the correct ones. The data indicate that the expanded CIS is highly effective at meeting the needs of its users.

CHAPTER V

NEW MARKETS FOR CAREER INFORMATION

By John R. Wish

POTENTIAL FOR ADULT, NON-SCHOOL MARKET

A major goal of the Educational Components Project was to improve information about schools and educational programs and thus to enhance individuals' decisions about post-secondary training programs and institutions. Earlier chapters have discussed the development of this information. At the same time, the Educational Components Project attempted to measure the results of expanding access to the information to several subgroups in the population. This chapter discusses the usefulness of the information as perceived by an adult, non-institutionalized audience and the marketing implications that result.

Typically, post-secondary educational institutions provide high schools with catalogs, brochures, and visits from admissions personnel. But they do little to disseminate, in any special way, information to non-school populations such as veterans, welfare parents, the unemployed, the disenchanted employed and other subgroups of the adult, non-school world. A report by the Commission on Non-Traditional Study corroborates this notion, and indicates that lack of pertinent information, as well as fears that education would take too much of their time or that they are too old for further education, discourage adults from returning to school.[1] All of these obstacles might seem more easily surmountable if comprehensive information about program and school options were readily available to a wide variety of prospective consumer groups.

To this end, the Educational Components Project focused on facilitating delivery of CIS information to adult populations in locations such as shopping centers. In the analysis that follows, first the experience at shopping centers is reviewed. Second, by using the findings of the shopping center field test, the implications for the marketing of this System are discussed.

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[1]K. Patricia Cross and J. Quentin Jones, "Problems of Access," Explorations in Non-Traditional Studies, ed. by K. Patricia Cross and Samuel B. Gould (San Francisco: Josey-Bass, 1972), pp. 39-63.

FIELD TEST IDENTIFIES ADULT MARKET

The marketing effort[2] undertaken by the Career Information System for the Educational Components, in accordance with the objectives outlined in the project proposal, concentrated on an adult, out-of-school population as a potential user group. Until the market tests in mid-1974, consumers of CIS had been students in schools. Growth in that "segment of the market" has been such that, in the fiscal year ending June 30, 1975, over 60 percent of Oregon's secondary school students had easy access to the Career Information System, and in the next fiscal year, the same will be true for community college students.

The marketing study was designed to evaluate the usefulness of the expanded CIS to adults. Consequently, the marketing effort was directed toward adult populations in locations like shopping centers.

As noted previously, there are a great many adults who need and want this kind of career and educational information, including: women wishing to return to the labor force after several years of raising children, people wishing to change jobs, and people wanting to compare information about various schools. Returning veterans, the unemployed and the handicapped are others of the adult population who could use this information.

One of the objectives of the Education Components Project was to ascertain the demand for CIS among the non-institutionalized adult population. While previous use with adults has dramatically demonstrated that numerous adults like to use CIS, it was necessary to test market the expanded version of the Career Information System with its educational components to determine more precisely who would use it, at what price, where and why.

FIELD TEST DONE AT SHOPPING CENTERS

Fifteen locations were selected for testing. The users whose characteristics are reported in this chapter used CIS at four regional shopping centers in the Portland Metropolitan area. Computerized career information was made available at no cost to users in high-traffic locations for three to seven days each under the joint sponsorship of the Career Information System office and the local community colleges. Marketing practice, drawing heavily on geographic and psychological theories, assigns a great deal of attention to proper location. And location is thought even more important in the provision of services like those of CIS.

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[2] "Marketing" as used in this report is a carefully selected term which is used here to refer to the task of identifying people who will benefit from the System and then devising effective ways of covering the associated costs. Marketing has a place.

Over 90 percent of the shopping center users confirmed that the shopping center location was convenient. Only six percent of the adult users could suggest a more convenient location than the shopping center they were at, and many of the suggestions were for shopping centers closer to their home.

PRIME USERS ARE YOUNG, NON-SCHOOL ADULTS

Adult, non-student users found the expanded System useful. They found the shopping center convenient. The results of the test runs at the shopping centers also indicate that a major non-institutional adult market exists in young adults who are planning to attend school. Almost equal proportions of both sexes used CIS, 85 percent were planning to attend school, 38 percent were seeking employment, and the majority were under 30.[3]

Table 15

Adult, Non-School Attendees
Users at Shopping Centers

Age	Percent of Users
18-24	41.8%
25-31	27.6
32-45	24.2
45+	6.4
	100.0%

n = 203

While eight out of ten adult users were planning to attend school, and about half as many were seeking employment, these users were uncertain both in respect to which specific careers they might pursue and which schools they might attend. The following table illustrates this high degree of uncertainty.

[3]Chapter IV, p. 30, gives more details on users' characteristics. Here we note the specific characteristics of adults who were not in school.

Table 16

How Certain Are You About:

	Your Career Choice	Your School Choice
Rather or very uncertain	44.7%	50.0%
Rather certain	35.1	33.1
Very certain	20.2	16.9
	100.0%	100.0%

USERS WILLING TO PAY COSTS OF SYSTEM

CIS has built up strong cooperative relations with the various schools who, by mutual agreement, provide the service to their users free of any direct charge.[4] While these arrangements work quite well in institutional settings, they are limiting when other market segments are considered. If the service is to be provided directly to adults, charges to users probably will be made. Further, estimates of monetary worth by the user provide a measure of the usefulness of the information.

Two alternative research approaches were considered: (1) actually sell the CIS service at some price; or (2) ask users what they thought the service was worth. There are advantages and disadvantages to each method. In the former case (specifying a particular price to the user) the supplier can know precisely how many persons will pay for the service. On the other hand, one cannot know what proportion of the users would have paid more for the service and how many potential users would have paid for the service if it had been offered at a lower price. The decision was made not to charge users a fee, but to ask them to indicate what price they would be willing to pay for the service.

As a result of the decision not to charge users a fee, the information was presented free to users in shopping centers with the staff help of community colleges. But each user was asked to fill out a questionnaire which included the question: "Please check the figure representing the MOST you would be willing to pay to use CIS."

As indicated in the following table, the majority of the adult, non-students found the CIS information valuable enough to assign a significant dollar value to it. Further, the table shows that the perceived dollar value of that information increased after use. The average worth before use was $4.56 and after use it rose to $4.81.

[4]Bruce McKinlay, Developing a Career Information System (Eugene, Oregon: University of Oregon, 1974), p. 166.

Table 17

Worth of CIS to Adults Not in School

Adults Saying They Would Pay:	Before Use	After Use
$0.00	11.1%	16.9%
$1.00-$5.00	27.9	24.7
$5.00-$7.50	37.9	29.4
$6.50-$10.00	3.7	4.3
$10.00 or more	19.9	24.7
	100.0%	100.0%

After using CIS, 64 percent of the users said they would be willing to pay $5.00 or more to use the System.[5] Table 18 below indicates that a fee of $5.00 per user would pay the costs of a computerized system like CIS.

[5]In an attempt to understand why people thought it worth very little in dollar terms while almost two-thirds were willing to pay $5.00 or more, a discriminate analysis was run. No demographic variable predicted whether a person was willing to pay $5.00 or more. The only variables that made a difference were, with one exception, subjective ones. Did the respondent feel he or she had a "knowledge gain?" Would he or she "recommend it to friends?" Was there a change in "first job choice?" And, how certain was the person about that first job? These findings do not help the marketing manager. The study does show that most users like CIS and say they are willing to pay for the service.

Table 18

Estimated Costs of CIS Per User[a]

One-half hour of computer time	$1.50
User fee for research and system maintenance	1.00
Terminal rental and phone line ($90.00 per month divided by 240 users)	.37
Staffing costs by institution	1.50
Space rental	.25
	$4.62

[a]All cost accounting systems are arbitrary. The better ones have a close correspondence to reality, a consensus about the allocations, and account for all costs. These allocations seem to be a close approximation of the total costs assuming: 1) that the staff is occupied with other tasks three-quarters of the time and is paid at the rate of $6.00 per hour; 2) that the space rental allocated to this equipment will not exceed $80 per month for the 240 users; and 3) that the computer terminal is not used for any other functions. We believe these estimates are conservative in that they overestimated the direct costs of Career Information System in an ongoing center.

The 18-24 age group used CIS twice as frequently as they are represented in the population. The mature adults, 46 and over, used the System only one-fifth as frequently as they occur in the population.[6] Interestingly enough, those mature adults who used the System may be more willing to pay $5.00 or more to use CIS. Seventy-six percent of those age 39 and over were willing to pay $5.00 or more while only 64 percent of the total sample were willing to pay this amount.[7] Another finding indicated that users living in suburban areas were slightly more likely to pay for the service than those from rural areas.

The study of CIS use at selected shopping centers shows that a "target market" is adults under 30, most of whom are considering more schooling, about half of whom are looking for a job. The shopping center is the best location, especially if notice of the service's availability is described or advertised in the media in advance.[8]

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[6]U.S. Bureau of Census, Statistical Abstract of the United States: 1974 (95th ed.; Washington, D.C., 1974), p. 31, shows that 19 percent of the U.S. adult population is 18-24 while 35 percent is 45 and over.

[7]The results are not statistically significant at the 95 percent confidence level, but the social significance of this difference is important enough to merit further investigation.

[8]It is not known how much of the interest in "attending school" was due to the shopping center demonstrations being sponsored in conjunction with the local community college.

SEVERAL POTENTIAL MARKETING METHODS FOR CIS

Coin-Operated Terminals Considered

Given that there are a number of potential users who want CIS information, it remains to be seen how to get the information to them in a convenient and low cost manner. Coin-operated terminals were proposed as one option.

Originally, it seemed that an estimate of total demand for the service for a fee could be obtained by setting up an unattended terminal with a coin box at high-traffic locations such as laundromats, airline terminals and shopping centers. This turned out not to be feasible because the technology is not yet adequate and many users need some assistance in using the terminal. The following discussion addresses these problems and concludes that an unattended coin-operated terminal will not work at the present time.

Terminal Costs Average $1.50 Per User

Computer terminals are moderately sophisticated and costly pieces of equipment. Rentals for the simpler terminals and accompanying telephone lines and equipment begin at $100 per month.[9] A reliable, yet faster terminal, costs at least twice as much. These estimates are based on the terminal used by most sites now connected to CIS, the Teletype Model 33 (ASR). It is the cheapest, as well as the slowest (10 characters per second), terminal. At the speed of this terminal, 20 to 40 minutes is needed to obtain the career and educational information contained in CIS. Computer service centers in Oregon charge an average of $3.00 per hour of terminal connect time. Thus, the computer charge amounts to approximately $1.50 per user.

CIS User's Fee: $1.00 Per User

CIS User's fee for traditional users is assessed at $1.00 per user for the first 3,200 estimated potential users and $.30 per user for estimated potential users over 3,200. For this fee CIS provides the user with updated and localized occupational information, Oregon post-secondary programs and schools information, CIS in-service training, CIS user handbooks, CIS coordinator's handbook(s), CIS newsletter Update, appropriate bibliographical materials, and follow-up services.

Users Need Some Degree of Assistance

Economic factors weigh heavily against the implementation of a career information system which disseminates through coin-operated terminals. High fixed costs, maintenance and repair problems make this delivery system impractical at the present time.

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[9] Datapro Seventy, Datapro Research Corporation, Delran, New Jersey, and personal communication with salesmen.

The expanded Career Information System is, from an objective standpoint, a stand-along, self-instructional system. It is analogous to a research-reference library. The information can be easily accessed if one knows and understands the System.

But a helper seems to be needed by some persons. Frequently that helper is one who merely assures the client that he or she will not hurt the machine. Then, too, there are breakdowns at the computer service bureaus. The helper assures the client that he or she did not cause the problem.

Maintenance and Repair Problems: Coin-Operated Terminals Infeasible

Since the equipment is subject to malfunctions, a good service department is absolutely essential. And, in Oregon, users of computer terminals suggest there are only four or five reliable full-service suppliers of terminals (including Pacific Northwest Bell, Carterphone, and Western Union). None of these suppliers presently has a coin-operated computer terminal. None of these suppliers was willing to provide an unattended terminal without CIS assuming full responsibility for any damage to the terminal (an unknown factor). In fact, Pacific Northwest Bell, the largest supplier of existing terminals for users of CIS, says bluntly that they offer coin-operation only for telephones and then only when the telephone company controls every aspect.

Economic factors weigh heavily against the implementation of a career information system which is disseminated through coin-operated terminals. High fixed costs, maintenance and repair problems make this delivery system impractical at the present time. So the question remains of how to provide CIS services to adult users.

CIS Distributed by Intermediate Education Districts and High Schools

Seldom do originators provide a product or service directly to users. It's just too complicated. "Middlemen" are used (See figure 1) to simplify the distribution of the product or service. A "channel" is conceptualized as a link between the raw materials producers and the final users. In that concept, the CIS office is the manufacturer (See figure 2). CIS brings together data from many sources and packages it in ways that make it understandable and meaningful to a wide variety of users. There are four types of flows through the channel: 1) the actual service; 2) use rights to the service; 3) payment for the service; and 4) information about the service. These flows can be facilitated by "middlemen" which are analogous to wholesalers and retailers. In the case of CIS, the intermediate education districts on whose computers CIS runs are the wholesalers.[10] Retailers are a type of middleman in that

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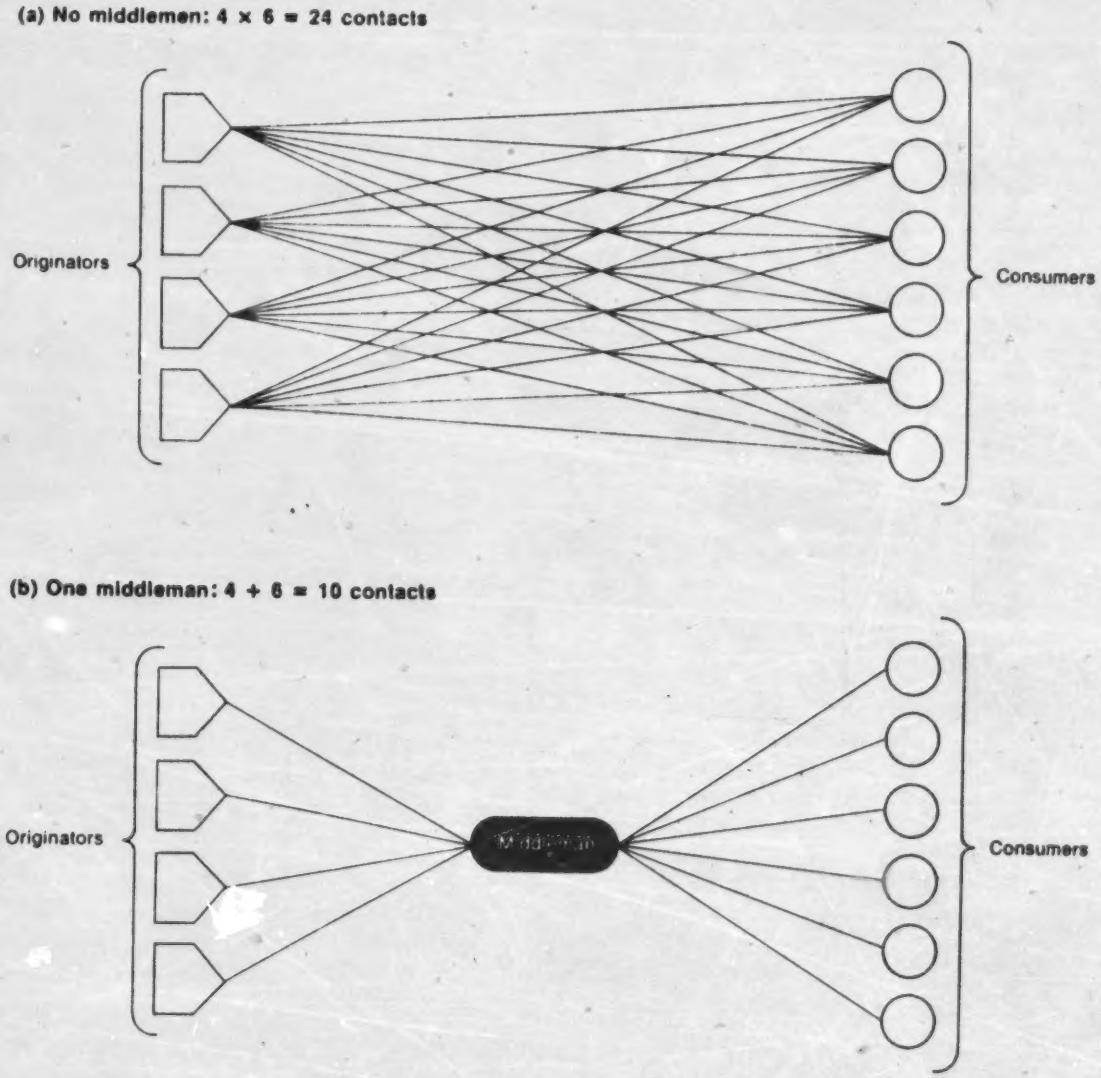
[10]These computer centers function analogously to a commercial computer service operation like TYMSHARE in that they make available a number of types of programs and computer services for their accounts, which are mostly schools. The computer centers essentially provide multiple administrative and instructional services of which CIS is one.

they function in the channel by securing services and use rights to those services from manufacturers and wholesalers and make them available to final users. For CIS users of high school age, for example, the counseling departments of the high schools, seem to be effective retailers of educational information.

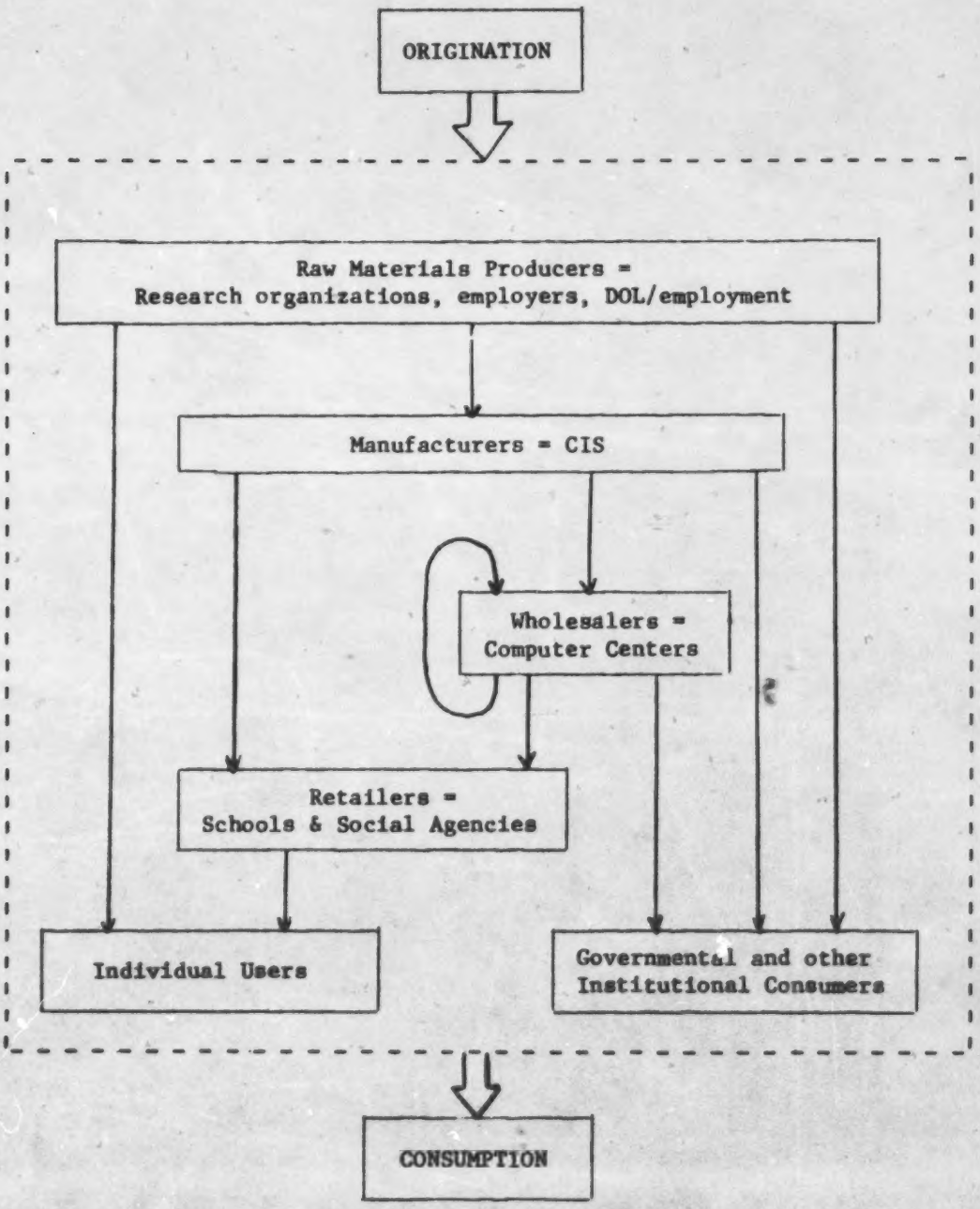
Figure 1



Source: Ben M. Enis, Marketing Principle: The Management Process (Pacific Palisades, CA: Goodyear Publishing Co., 1974), p. 89.

Figure 2

A Channel of Distribution
for Career and Educational Information



Source: Ben M. Enis, Marketing Principle: The Management Process (Pacific Palisades, CA: Goodyear Publishing Co., 1974), p. 99

Connections between CIS and its wholesalers are well established and stable. Computer centers are widely available. CIS tapes are made available on a contractual basis to various computer centers operating different types of equipment. CIS to them is just another service they offer the institutions that subscribe to their services.

Retailers are a different story when it comes to supplying educational information to adult audiences. Who can and will make CIS available to ultimate users is a question of great importance. It is awkward for CIS to be directly contact users (See Figure 1).

Traditional Retailers Don't Service Non-School Adult Populations

Career Information System's most numerous "retailers"[11] are the high schools, particuarly counseling departments. The high school counselors are doing a good job of making CIS available to their students. The best job is done in those places where the computer terminal or CIS books are available to the student any time without screening by a professional. The poorest job, in terms of frequency of use, is where access is limited by location and/or time availability. Adults, however, do not find the school location convenient; few adults will go to the high school to get questions answered. So one needs to ask the question of where might adults go for advice about their careers or education.

The previous section indicated that adults will come to a shopping center to use CIS. Then the question becomes who or what organizations might make CIS available to adults in shopping centers and elsewhere. In response, a number of institutions come to mind: colleges, government social service agencies, libraries, unions, private counselors, churches and maybe even banks. In this study, CIS found colleges to be the most viable possibility as a retailer of career information to adult audiences.

Community Colleges Possible Retailers for Non-School Adult Users

One of the most successful retailers of CIS at the present time is Lane Community College. Lane has a Model 33 Teletype terminal located on a major pedestrian thoroughfare bounded on one side by the school's library and on the other by the student bookstore. Use of the terminal is free to both students and to the community at large. Further, Lane was the first community college to sponsor free computerized career information in a shopping center mall. Lane set up CIS in March, 1973, as a community service in Eugene'e Valley River Center.[12]

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[11]The term "retailer" is seldom used for schools but it seems desirable here in order to focus on the nature of the service and the organization offering it.

[12]See Chapter VII, p. 71.

Mt. Hood Community College in the Portland metropolitan area also has used the Career Information System in their community outreach programs. Mt. Hood sponsored a week-long presentation of CIS information at the Gresham Mall and Mall 205 in August, 1974. As a result, Mt. Hood claims to have added 100 new students to their enrollment.

These successful attempts to provide a service to the general community under the sponsorship of individual community colleges led to a contract signed in June, 1975, between CIS and the State Department of Education. All community colleges in the state now have access to CIS services without paying additional user fees. One of the major marketing tasks for the CIS staff is to show the various departments within the individual community colleges how CIS can help them solve their problems. The experiments made by Lane and Mt. Hood demonstrate that CIS can be used for 1) increasing student satisfaction by being prominently available to people who wish to use the service on campus; and 2) recruiting students and increasing public awareness of services at community colleges by promoting CIS use in shopping centers and other locations in the community. CIS has not yet had the staff time, however, to help get greater involvement of community colleges and the office of high school relations in setting up demonstrations at the shopping centers.

Some additional factors exist that a person wishing to market CIS through community college sponsorship at shopping centers might consider. During the summer, most schools operate at less than full rate. Many staff are paid part-time, if at all. The computer centers--the wholesalers--that store CIS data tapes often are working at less than full capacity. And many shopping centers are looking for ways to increase traffic. These conditions would seem to favor various retailers (i.e., community colleges) making computerized career and educational information available at shopping centers.

At any rate, the present study indicates that the community college/ shopping center approach to marketing is a reasonable retailing channel for systems like CIS. Some other agencies also are possible retailers in this situation and might be studied more closely in other efforts.

Other Possible Retailers for Non-School Adult Users

Some helpful considerations learned by CIS during the course of the marketing study described in this report have to do with libraries and social service agencies as possible retailers of CIS.

Some people go to the library to obtain answers to important questions. Yet the information explosion and the fiscal realities of fixed budget place many libraries in a financially strained position. Many libraries claim not to have the budget to take on new services. And there is the "carnegie syndrome" of a library offering only free services. But the idea that we "can't charge"

for services is changing in libraries, and as noted above, there are people who will pay for information services. This subject was discussed in another context in an earlier paper.[13]

The University of Oregon library applied for a demonstration grant under Title IIB of the Higher Education Act. The proposal called for CIS information and bibliographic services to be made available to the public libraries throughout the county. A portable terminal, weighing about 25 pounds,[14] which operates relatively silently and at two or three different speeds would be used by University personnel who would be "circuit riders," spending one or two days a week at each of several locations. After a year, the public library staff would know the data bases, how to operate the terminal, and have an idea of the demand. The second year of the project users would pay 50 percent of the costs and the third year users would pay 100 percent of costs.

Another class of retailers are social service agencies such as social security, vocational rehabilitation, counseling centers, and churches. These organizations see numbers of people who are not happy with their career and/or educational outlook. CIS can help people sort through their interests, abilities, and educational opportunities. Since CIS is available in both printed forms as well as computer output, these offices can choose the output that is most useful for them. Portable terminals and staff expertise in such federal programs as WIN and ADC Confidence Clinics make possible the advertisement in the mass media of "Computerized Career Information." That service could be offered in small groups, individually, or even as a service in the home of the person who had questions. This issue deserves further exploration.

SUMMARY

There are a number of adults who are not in school who find the information in the Career Information System usable. Two-thirds of those using the System claim that the information was worth $5.00 or more. Since 85 percent of the users intended to go to school, some school-related entity such as a community college or four-year college is an obvious retailer to make this information available to users in shopping centers. Two other types of retailers have been briefly discussed and are being pursued by the CIS staff: libraries and social service agencies.

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[13] John R. Wish and Mary Ann Wish, "Marketing and Pricing of On-Line Services," Proceedings of the May 1975 Meeting of the American Society for Information Science.

[14] Datapro Seventy, Datapro Research Corporation, Delran, New Jersey.

CHAPTER VI

APPLICABILITY OF CIS TO CORRECTIONAL INSTITUTION INMATES

By Bruce McKinlay

INMATES NEW USER GROUP

The Career Information System was installed in two adult correctional institutions--the Oregon State Penitentiary and the Oregon State Correctional Institution. The unique qualities of this user group made this a particularly interesting test of the System's relevance and value to potential user populations. The field test indicated that an information system linking occupational and career information is even more valuable to inmates than for other users.

Counseling staffs in both institutions referred inmates to the System for exploring and/or finalizing school release, work release, or parole programs as well as for selecting appropriate training programs available in the institutions.

Inmates who used the expanded CIS were asked to complete evaluation questionnaires. A total of 67 returned questionnaires usable for measuring the effectiveness of the expanded CIS with Corrections' clients. The sample population represents approximately 18 percent of the combined population of the two institutions.

All users in the sample were men, averaging 23 years of age. The average level of educational attainment was eleventh grade with almost half (46 percent) of the users enrolled in one or more of the several kinds of classes offered in the institutions.[1] Four-fifths (79 percent) of those queried planned to further their schooling upon release.

Six out of seven users indicated that they wanted occupational and educational information for planning their activities after their release. Seventy-four percent indicated they had a parole board hearing date set at the time they used the System. Expected time of release ranged from one week to several years, with the median time until release being five months.

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[1]Both institutions offer G.E.D. courses, vocational training, and credit-bearing college-level courses.

MOST USE SYSTEM TO FURTHER OCCUPATIONAL PLANS

Computer use records, the basis of accounting for system expenses, show that inmates used the Career Information System extensively, both initially when the terminals were located on the education floors and later when they were moved to more widely accessible locations.

As shown in Table 19 below for a sub-sample of 32, inmates had various reasons for using the System, suggesting that they are at a variety of points in the decision-making process. It is noteworthy that 75 percent of the users came to the System primarily in search of occupational information--22 percent to decide on a career, 28 percent to confirm a career choice, and 25 percent to gain information about an occupation. The heavy emphasis on occupational information, despite the fact that 78 percent expected to pursue further schooling, highlights the desirability of linking occupational and educational information in one system. Clearly, the inmates' desire for occupational information, despite planning to pursue schooling before entering the labor market, reinforces the importance of having occupational information while making educational decisions.

Table 19

Primary Reasons for System Use Cited by Correctional Institution Users

Decide on Career	Confirm Career Choice	Information on Occupation	Information on Job Preparation	List of Schools Having Program	Information on Specific School
22%	28%	25%	19%	3%	3%

n = 32

BOTH OCCUPATION AND EDUCATION FILES USED

Inmates made extensive use of the System's various components. Nearly all of them obtained both occupational and educational information.

Table 20

CIS Components Used by Inmates

Component	Per cent of Inmates	Average Number of Inquiries
QUEST questionnaire for occupational exploration	80%	-
Occupational Descriptions (DESC) of job duties, requirements, and outlook	89	2.9
Methods and tips on Career Preparation (PREP) (incomplete during part of test)	54	1.6
Summaries of courses, methods of instruction, and list of schools offering various Educational Programs (PROG)	71	2.2
Services and costs of Oregon Schools (SCH)	25	2.3

The evaluation data further indicate that this combined occupational-educational information system is especially useful to Correctional institutions, for a significantly higher proportion of inmates used the Preparation, Program, and School files than did other types of users.

SYSTEM HIGHLY RELEVANT TO CAREER PLANS

What difference does all this usage make? There is no single, unequivocal proof of effectiveness for information systems any more than there is for education, counseling, or a host of other services; however, there are a number of indicators, including users' statements of the System's relevance, completeness, and their general opinions of the System.

Relevance is determined by the decisions that users are facing and the general availability of pertinent information. Finding accurate, complete and up-to-date information on occupations and educational alternatives is difficult enough anywhere, and it is next to impossible behind the walls of a prison. The inmate population is isolated from the informal "word-of-mouth" sources that predominate in society at large. The institutions try to compensate by inviting outside "experts" to discuss educational or occupational opportunities, but such activities cannot be comprehensive. Thus it is not surprising that the implementation of the Career Information System within correctional institutions was perceived as a major breakthrough in providing inmates with a formal source of information. Not surprisingly, a large number of the users found the System relevant in planning their post-release futures. Additionally, correctional institution users found the System just as easy to use and the System's information just as understandable as other tested sub-populations.

Turning first to the QUEST questionnaire, we find that all find the QUEST items relevant to their career planning, and two-thirds say they are "very relevant" or "mostly relevant."

Table 21

Perceived Relevancy of QUEST
Items to Inmates' Career Planning

Very Relevant	Mostly Relevant	Average	Slightly Relevant	Not Relevant
32.8%	32.8%	29.9%	4.5%	none

n = 67

Another measure of the appropriateness of QUEST to correctional institutions is the ability of QUEST to suggest new occupations of high interest to inmates. As Table 22 below indicates, over seven out of ten users reported that their use of QUEST had given them suggestions for jobs that they "would seriously consider."

Table 22

Inmates to Whom New Occupations
Were Suggested by QUEST

Definitely No	No	Unsure	Yes	Definitely Yes
None	11.9%	16.4%	41.8%	29.9%

n = 67

The percentage to whom QUEST suggested new job ideas (72 percent) is impressive since only 50 percent of the users originally came to use the System either to decide upon or confirm a career choice. In fact this benefit is significantly more pronounced for inmates than for other types of users.

Turning to the System's information files, we see that over four out of five users termed the information either "mostly" or "very" relevant to their decision making needs. Inmates' statements concerning each of the files are reported in Table 23.

Table 23

Relevance of System Files to Inmates' Career and Educational Decision Making

	Description File	Preparation File[a]	Program File	School File
Not Relevant	---	---	---	5%
Slightly Relevant	1%	2%	2%	---
Average	18	26	20	---
Mostly Relevant Relevant	44	33	33	28
Very Relevant	37	40	46	68
	n = 71	n = 43	n = 46	n = 19

[a]File incomplete at the time of the test

SYSTEM ADEQUATE, COMPLETE

Another criterion is the extent to which users judge the information to be complete. On this second dimension, correction institution users found the System to contain and present the information they needed. Judging the completeness of information in the System as a whole, nine out of ten users (94 percent) reported that the System either "mostly" or "completely" delivered the information they desired.

Table 24

Degree to Which System Files Supplied Needed Information to Correctional Institutional Users

	Description File	Preparation File[a]	Program File	School File
No (inadequate)	---	6%	---	---
Little	---	3	---	---
Some	7%	---	3%	---
Mostly	43	31	24	33%
Yes, completely	50	60	73	67

[a]The Preparation File was incomplete at the time of the test.

SYSTEM ALTERS USERS' CAREER AND EDUCATION PLANS

The previous two sections show that inmates find the System relevant to their career and educational decisions and the information complete enough for their immediate needs. The cooperative test of CIS in the institutions also attempted a measure of its effect on inmates' choices.

The same pattern appears here as elsewhere--use of current, localized information has a major influence on people's choices. This effect is measured by comparing people's first choice career, program, or school before and after System use and comparing their certainty about those choices. Following are the results for corrections inmates.

Table 25

Effect of CIS on Inmates' Choices

	Percent of Inmates Who Changed	Change in Certainty
First Choice Career Field	19%	22%
First Choice Educational Program	26	36
First Choice School	3	13% increased certainty about their choice

The System also serves to confirm choices. For example, while only three percent of the users changed their choice of schools after using the System, thirteen percent were more certain about their previous choice after using the System than before.

USERS SATISFIED WITH SYSTEM

As the foregoing data would suggest, respondents in correctional institutions were quite satisfied with the Career Information System. More than four out of five inmates reported that they learned "a lot" (49 percent) or "a great deal" (34 percent) from using the System. All respondents in the correctional institutions reported that they believed the information they received from the System would be useful in preparing their release programs. Over nine out of every ten users predicted that they would "probably" (37 percent) or "definitely" (55 percent) use the System again when they need further occupational and/or school information. Over half (58 percent) stated that they would "definitely" recommend the System to their friends, while 40 percent said that they would "probably" do so.

As with other user groups, the inmates were asked what they had found the most difficult aspect of using the System. The most commonly quoted item was coming to understand the mechanical process of accessing the information from the System. Eighteen percent of the users made this observation. But the fact that two-thirds of the users (67 percent) found nothing difficult in the System to mention would seem still more significant. The mechanical difficulty in using the System does not appear severe since an examination of duplicate print-outs shows that nearly half (48 percent) of the users made no errors at all in using the System while only one in sixteen users (6 percent) made more than three errors. (The computer program is written to aid the user in correcting errors without staff assistance.) Furthermore, when asked what would make the System still more useful, fewer than four percent of the users mentioned making operation easier. To the question of making the System more useful, seven out of ten inmates (72 percent) had no suggestion to make, noting that it was "just fine" as it was. Of those making suggestions, most wanted the System's information or services expanded, thus identifying areas of possible increased service to corrections users.

SUMMARY

The cooperative evaluation of CIS usage in two of Oregon's correctional institutions indicates that the System is a useful component of the institutions' services. Inmates use it extensively and with ease. The integration of career and educational information benefits users who are heavily engaged in education release planning as well as those who are not.

From the inmates' perspectives the information is complete and relevant to their planning, and it does influence the choices the men make. Users are satisfied with the System and expect to use the System again and recommend it to their friends.

Several of the most positive findings, notably extent of use and the System's ability to suggest relevant new occupations, are statistically more significant for inmates than other users, suggesting that inmates should remain a major client of CIS.

CHAPTER VII

APPLICABILITY OF CIS TO SHOPPING CENTER PATRONS

By John Coggins

SHOPPING CENTER PATRONS NEW USER GROUP

During August and September of 1974, the Career Information System (CIS) established temporary teletype terminal sites for use by the general public in four major shopping centers in the greater metropolitan Portland area. The terminals were placed in high exposure locations within each shopping center and manned for one week by counseling staff from local community colleges served by CIS. These shopping centers gave the public exposure to the information system and also provided the opportunity for the collection of information on interest in, use of, and reaction to the System by the general public.

One of the main project goals was to examine the possibility of extending the CIS services to new user populations. The System, for the most part, has been used in school settings by young people with little or no job experience. The System was taken to the shopping centers to examine its potential usefulness by people more representative of the general population, and particularly by segments of the population most in need of career and educational information, but not in direct contact with the school systems; for example, women, the disadvantaged, and the unemployed. This is not the first time CIS has made its services available to the general public. The original Career Information System was installed for one-week periods in Eugene at the Valley River Center and was sponsored at various county fairs by community colleges and county school districts. The System receives very heavy usage and elicits a favorable response from its users in those settings. The results encouraged the Career Information System to implement a more extensive field test and evaluation of the applicability of the expanded CIS to the general public.

Chapter VI examined the marketing implications of providing CIS to the adult population. This chapter will examine what types of people used the System, how easy they felt it was to use, how complete or adequate the information was for them, and what impact the System had on them.

Information was collected at system terminal sites in shopping centers from 400 users. Slightly over half (58 percent) of these users were women. More than four in ten (43 percent) were not working at the time. More than one-third (38 percent) of those using the System reported that they were actively seeking employment.

People using the CIS system at shopping centers ranged in age from 11 to 74 years, with a mean age of 27 years. Though testing in the shopping centers was particularly aimed at the segment of the population not attending any kind of school, the use of the System in these sites was not reserved solely for persons then not attending school.[1] A large proportion of the users expressed an interest in continuing their education. More than six out of every seven (86 percent) respondents reported that they were planning to enter school. Table 26 below summarizes shopping center users' gross annual family income.

Table 26

Gross 1973 Family Income of
CIS Users in Shopping Centers

$5,999 or less	$6,000 to $11,999	$12,000 to $17,999	$18,000 or more
29%	35%	24%	11%

SYSTEM EASY TO USE

CIS users in high schools and community colleges usually become acquainted with the System through a teacher or counselor. These avenues are not as readily available to the adult population, and so the problem of how to make adults aware that this service is available to them becomes an important topic. About half of the four hundred people who stopped at the terminals in shopping centers had heard of the Career Information System before that day. For the other half, the System was completely new. Those who had previously heard of the System had learned of it from a wide variety of sources. These sources divide rather equally in thirds between mass media (34 percent), interpersonal (35 percent) and direct chance encounter with the terminal in the shopping center (31 percent). Those users who first learned of the System from another person heard about it from an informal contact more than twice as often as from a formal contact. Friends and members of one's own family constituted about seventy percent of these contacts while teachers and counselors comprised only about 30 percent.

[1] In the following analysis, it will be noted when findings are based on adult, non-school enrolled users only.

While one aspect of system accessibility is the convenience to users of terminal locations, a second aspect concerns the accessibility of information within the System. Accessing computer-stored information directly is a very new experience for most members of the public. The System does require that the user take some care in the commands he or she enters on the terminal.[2] Still, shopping center users on the whole do not find the System difficult to use. This finding is consistent with other user groups' rating of System ease. When asked what aspect of the System they found most difficult, over a third (39 percent) of the adult users responding found nothing at all difficult. Another third (35 percent) mentioned some mechanical or conceptual aspect of learning to use the System. This percentage takes on more meaning, however, when combined with users' responses to another questionnaire item. When asked what would make the System more useful, fewer than one in seven (13 percent) mentioned easier operations. The most popular response to this question was a request for yet more information. Some ideas offered were to provide information on out-of-state jobs, to include information telling which specific employers were hiring people for the listed occupations, and to add more occupations to the System.

An examination of the type and number of actual errors made by users in accessing information again reflects the degree of ease public users experienced in using the System. As Table 27 below shows, over half of the users made no errors at all in using the System. Only one in twelve users made more than three errors.

Table 27

Percentage of Shopping Center Users
and Frequency of Use Error

No Errors	One Error	Two or Three Errors	Four or Five Errors	More than Five Errors
58%	20%	14%	5%	3%

[2]See Chapter IV, p. 31-33.

SYSTEM ADEQUATE, COMPLETE

In responding to questions concerning the ability of the Career Information System to supply them with needed information, users in the shopping centers judged the files as quite adequate and complete. Nine out of ten users rated the Program file as mostly or completely adequate. Over eight out of ten users rated the Occupational and Preparation files in similar categories. Only the School file was rated less complete, although over half its users indicated it gave them most or all of the information they desired. Shopping center users rated the files slightly less complete than all users combined. Table 28 below summarizes the responses of users to the question, "Did the file give you the information you wanted?"

Table 28

Adult, Non-School Public Users Judgment of the Adequacy of Information Supplied by the Four CIS Information Files

"Did the file give you the information you wanted?"

	No, None	Little	Some	Mostly	Yes, Completely	
Occupational Descriptions	0.0%	8.8%	4.9%	52.2%	30.1%	N=226
Preparation File	0.0	14.1	4.2	60.6	21.1	N= 71
Program File	0.0	3.3	6.6	68.9	21.3	N= 61
School File	6.7	33.3	6.7	26.7	26.7	N= 15

Shopping center users were not given a knowledge test before and after they used the System, as were high school users. They were, however, asked if they thought they had learned from the System. Table 29, which follows, shows the response of users to this question.

Table 29

General Public Users
Estimating Degree of Knowledge
Gain After Use of CIS

Nothing	Little	Some	A Lot	A Great Deal
2.6%	9.0%	32.75%	34.0%	21.8%

n = 312

Over half the users thought that they had learned at least "a lot" from System use. Only about one in nine users (11.6 percent) thought that they had learned "little" or "nothing".[3]

SYSTEM ALTERS USERS' CAREER AND EDUCATION PLANS

Another measurement taken during the evaluation reflects a more direct effect the System was found to have on users and their occupational and educational decisions. This is the degree to which users changed the occupations, programs and schools they were most interested in from before to after System use.

The System was found to have its greatest effect, by this measure, on users' choice of educational/training programs. Over two out of every five users changed the program he or she reported being most interested in after using the System. System users changed least the school in which they were most interested. Table 30 which shows the degree to which shopping center users changed the occupations, programs and schools they cited as their "first choice" from before to after using the System follows on the next page. In all three categories these adult users changed their plans more often than did all users combined.

[3]For a more extensive analysis of the change in user knowledge resulting from System use, see Chapter IV, p. 36-37.

Table 30

General Public Users
Changing First Choice Occupation,
Program and School After System Use

	First Choice Occupation	First Choice Program	First Choice School
Changed	34.1%	41.9%	12.8%
Unchanged	65.9	58.1	87.2
	n = 220	n = 105	n = 133

The System can also have the effect of confirming tentatively held decisions. Thus, those users represented in the table above as "Unchanged" cannot be necessarily said to have been "uneffected" by the System. For, though the occupation, program or school in which they held the most interest may not have changed, the degree of certainty with which they held these choices often did. Table 31, which follows on the next page, shows the extent to which general public users of CIS changed the certainty they had in the occupational and educational choices they had made before using the System. Again, the System had a greater effect on this subgroup of users than all users combined. Slightly more shopping center users changed the certainty of their first choice occupation, program and school.

Table 31

General Public Users Changing Certainty of Occupational, Program and School Choices After System Use

	Certainty of Occupation	Certainty of Program	Certainty of School
Changed	35.3%	34.4%	30.7%
Unchanged	64.7	65.6	69.3
	n = 241	n = 131	n = 153

Approximately one-third of the users here changed the degree of certainty they felt in the educational and occupational goals they held before System use.

The above table does not reflect, however, the direction of the change in certainty experienced by these users. As discussed in Chapter IV, it is not to be assumed that it is good for users to become more certain of their choices and bad for them to become less certain. Both changes can be a sign that the System is performing its function well. In all three aspects of user choice examined, the System's effect was to increase a user's certainty twice as often as it decreased it. Table 32, appearing on the next page, shows the percentage of users increasing and decreasing the certainty they felt about their choices as a result of System use.

Table 32

General Public Users Increasing and Decreasing Certainty of Occupational, Program and School Choices

	Certainty of Occupation	Certainty of Program	Certainty of School
Increased	29.5%	22.9%	20.9%
Decreased	5.8	11.5	9.8
	n = 241	n = 131	n = 153

When the effect of the System on changing a user's first choice occupation and the degree of certainty with which he or she holds that choice are examined conjointly, one finds that the System is more likely to change a user's certainty when it also changed his or her first choice occupation. Also, a user's certainty in occupation is much more likely to increase than decrease when such a choice changes. Table 33 below summarizes these changes.

Table 33

General Public Users Changing First Choice Occupation by Change in Certainty of First Choice Occupation[a]

	Decreased Certainty	Retained Same Certainty	Increased Certainty	Total
First Choice Occupation Unchanged	2.7%	75.0%	22.3%	100.0%
First Choice Occupation Changed	12.6	43.7	43.7	100.0

n = 380

[a]Table 33 has been collapsed from original evaluation data. The change in certainty is significant at p=.0002.

USERS SATISFIED WITH SYSTEM

Satisfaction with the Career Information System as a whole by public users is shown in the responses to several questions asked in the shopping centers. Firstly, users in these public sites were asked, after they had used the System, if they thought they would want to use the System again if they found themselves in need of more occupational or educational information. Table 34 below displays the responses made to this item.

Table 34

General Public System Users
Predicting Own Future System Use

Definitely Not	Probably Not	Does Not Know	Probably Will	Definitely Will
1%	6%	18%	44%	31%

Nearly a third (31 percent) of the users reported that they would definitely want to use the System again. Three out of four users responded that they would (at least) probably want to use it again if the need arose.

A second question asked: "Would the user recommend the System to other people as a source of occupational and educational information?" Over half of the respondents replied that they would "definitely" recommend the System to others. More than nine out of every ten respondents said that they would (at least) probably recommend it. Table 35 below displays the distribution of responses to this question.

Table 35

Public Users Predicting
Recommendation of CIS to Others

Definitely Not	Probably Not	Does Not Know	Probably Will	Definitely Will
1%	2%	3%	40%	54%

n = 320

Table 36 below shows public users' responses to an item asking their "overall satisfaction" with the System. Only one out of every twenty users expressed some overt dissatisfaction to the System. Nearly 15 out of 20 users (73 percent) expressed some degree of satisfaction. The remainder of the users (22 percent) were non-committal.

Table 36

Public Users in Five
Overall Satisfaction Response Categories

Very Unsatisfied	Rather Unsatisfied	It's OK	Rather Satisfied	Very Satisfied
2%	3%	22%	34%	39%

n = 321

SUMMARY

Shopping center patrons proved to be a viable new user group for the Career Information System. Most users were young adults who were out of school but planning on returning. Many were unemployed. They found the System easy to use and made a minimal number of errors. The four principal information files provided most users with the information they desired. The System produced a recognizable impact on users' career and education plans, sometimes altering their plans completely and sometimes changing their degree of certainty about those plans. Users were very satisfied with CIS, indicating that they would use the System again and recommend it to friends if it were available.

CHAPTER VIII

IMPACT OF THE EXPANDED CAREER INFORMATION SYSTEM ON OTHER AGENCIES

By Mary Kennedy Burton

NUMEROUS EDUCATIONAL INFORMATION SOURCES REMAIN

Chapter IV describes the impact of career and educational information on people's plans. The Educational Components Project had another objective as well. It intended not only to produce good information, but to do so in concert with the agencies already producing or disseminating educational information. The fact that many data sources proved inadequate made this objective both more difficult and more important than originally planned.

In fact the project barely scratched the surface in these areas, and there is still much to be done to improve the quality of educational data and the comprehensibility of its dissemination. Two results of the project are indicative of what can be done by cooperating agencies and for further encouraging such efforts.

OFFICE OF HIGH SCHOOL RELATIONS CHANGES MAJOR PUBLICATIONS

The Office of High School Relations, an arm of the Oregon State System of Higher Education, is responsible for disseminating information about the state's post-secondary schools to high school students, counselors and parents. As a result of the Educational Components Project the Office has overhauled the formats of three of its most widely distributed publications and is recommending a change in a fourth in order to benefit from the work of the Educational Components Project and to provide material complementary to the Career Information System.

"It's Your Decision"

The Office of High School Relations prepares each year a booklet entitled It's Your Decision, that includes general information about admissions, financial aid, housing, etc. as well as specific institutional program of study information. In past years, the program of study information was listed by institutional administrative categories that are, of course, different for each institution and irrelevant to the informational needs of prospective students, e.g., biology is in the College of Liberal Arts on one campus but in the College of Science on another.[1] What is important to the prospective

[1]See Chapter II, p. 13.

student is that biology is taught at both institutions. The Educational Components developed the Programs of Study and Training File to show program offerings by generic taxonomic headings rather than by administrative groupings. The format of this file was used in the revision of It's Your Decision for 1974-75. A person reading the booklet could easily find that biology was taught at the two institutions referred to above by simply looking under Biological Sciences, a taxonomic heading, in each school's list of undergraduate programs of study offered. Below are samples of It's Your Decision both before and after CIS taxonomic headings were adopted.

University of Oregon "Programs and Degrees"
Before CIS Taxonomic Headings Adopted[2]

PROGRAMS AND DEGREES

Liberal Arts	*Bachelor*	*Master*	*Doctor*
Anthropology	X	X	X
Asian Studies[1]	X		
Biology	X	X	X
Chemistry	X	X	X
Chinese and Japanese	X		
Classics	X	X	
Comparative Literature		X	X
Computer Science	X	X	
Economics	X	X	X
English (including Creative Writing)	X	X	X
French	X	X	X
General Arts and Letters	X		
General Science	X		
General Social Science	X		
Geography	X	X	X
Geology	X	X	X
German and Russian	X	X	X
History	X	X	X
Independent Study	X		
Italian	X	X	X
Linguistics[1]	X		
Mathematics	X	X	X
Medical Technology	X	X	
Philosophy	X	X	X
Physics	X	X	X
Political Science	X	X	X

[2]It's Your Decision, Oregon State System of Higher Education, 1973, p. 19.

University of Oregon "Programs and Degrees"
After CIS Taxonomic Headings Adopted[3]

Programs and Degrees
(Terms defined in Glossary)
B—Bachelor's
M—Master's
D—Doctorate
A—Associate
P—Preprofessional Program
C—Certificate
CP—Cooperative Program

Architecture
Architecture, **B, M**
Interior Architecture, **B**
Landscape Architecture, **B, M**

Area Studies
Asian Studies, **B, M**
Latin American Studies, **B**

Biological Sciences
Biology, **B, M, D**

Business and Management
Accounting, **B, M, D**
Quantitative Methods, **B, M, D**
Finance, **B, M, D**
Business Economics, **M**
Business and Construction, **B**
Real Estate and Urban Land Economics, **B, M**
Marketing, **B, M, D**
Transportation and Logistics, **B, M, D**
International Business, **B, M**
Forest Industries Management, **M**
Business Environment, **B**
Administrative Studies, **B**

"Fact Sheet"

A one-page handout called Fact Sheet is also updated by the Office of High School Relations each year. Its basic purpose is to provide a clear and comprehensive list of the programs of study offered by all of the state system schools. The Educational Components taxonomy was also used in rewriting the publication. Below are samples of the Fact Sheet both before and after CIS taxonomic headings were adopted.

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[3]It's Your Decision, Oregon State System of Higher Education, 1974, p. 38.

Baccalaureate Degree Programs
Before CIS Taxonomic Headings
Adopted[4]

Baccalaureate Degree Programs

(See institutional catalogs for areas of specialization)

Agriculture—OSU (including food technology, fisheries and wildlife)
American Studies—OSU
Anthropology—EOC, OSU, PSU, UO
Applied Science—PSU
Applied Design—SOC
Architecture—UO (including landscape architecture and interior design)
Art—EOC, OSU, PSU, UO
Asian Studies—UO
Automotive-Diesel—OTI
Biochemistry and Biophysics—OSU
Biology—EOC, OSU,[1] PSU, SOC, UO
*Black Studies—PSU
Botany—OSU[2]
Business—EOC, OSU, PSU, SOC, UO
Business and Economics—EOC
*Central European Area Studies—PSU
Chemistry—EOC, OSU, PSU, SOC, UO
Chinese—UO
Classics—UO
Community Service and Public Affairs—UO
Computer Science—PSU, UO
Corrections—OCE
Dance—UO
Dentistry—UODS[4]
*Earth Sciences—PSU
Economics—EOC, OSU, PSU, SOC, UO
Elementary Teaching—EOC, OCE, OSU, PSU, SOC, UO
Engineering—OSU
Engineering Technologies—OSU, OTI
English—EOC, OSU, PSU, SOC, UO
Entomology—OSU
Forestry—OSU

Baccalaureate Degree Programs
After CIS Taxonomic Headings
Adopted[5]

BACCALAUREATE DEGREE PROGRAMS

Agriculture and Natural Resources
Agricultural Chemistry—OSU
Agricultural Economics—OSU
Agricultural Engineering Technology—OSU
Agronomic Crop Science—OSU
Animal Science—OSU
Fisheries Science—OSU
Food Science and Technology—OSU
Forest Engineering—OSU
Forest Management—OSU
Forest Products—OSU
General Agriculture—OSU
Horticulture—OSU
Poultry Science—OSU
Rangeland Resources—OSU
Resource Recreation Management—OSU
Soil Science—OSU
Wildlife Science—OSU

Architecture
Architecture—UO
Interior Architecture—UO
Landscape Architecture—UO

Area Studies
American Studies—OSU
Asian Studies—UO
Latin American Studies—PSU, UO
Russian Studies—OSU

Biological Sciences
Biology—EOSC, PSU, SOC, UO
Biochemistry and Biophysics—OSU
Botany—OSU
Entomology—OSU
Microbiology—OSU
Natural Science-Biology—OCE
Zoology—OSU

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[4]Fact Sheet 1971-1972, Oregon State System of Higher Education.

[5]Fact Sheet 1974-1975, Oregon State System of Higher Education.

"Counseling for College"

A newsletter entitled Counseling for College is also a product of the Office of High School Relations. In past years it has included short items of information that would be of interest and use to its main readership: Oregon high school guidance counselors. This year the basic purpose was continued with the addition of a featured topic for each edition, which would include general information about a topic that was relevant to each of the seven state system institutions as well as specific information about each school. The idea for such a feature came from the format of the Programs of Study and Training descriptions. Elsewhere in this report is a writing guide for the Program descriptions which clarifies the reference to the format of first giving information that is common to all schools and then listing institution-specific data.[6] Below is a sample of the information added to Counseling for College.

> At Eastern Oregon State College career planning and placement services are provided through the Office of Student Development. Dr. Douglas Treadway is director of this office. The college utilizes the Oregon Career Information System (CIS). This system serves as a basic informational resource and guide. Supplementary career materials as well as detailed information of courses of study at EOSC are accessed through CIS.
>
> For more in-depth career planning, students meet with counselors who provide individual and group career guidance sessions. Workshops for career development, life-planning, and resume writing and interview/job application skills are offered on campus. A special course in Career Analysis is also taught. To supplement career counseling, the counselors often use various tests of aptitude, interest and personality. To coordinate career and academic advising, students are usually referred to one or more faculty members in the career planning process. In addition, a comprehensive listing of community resource people is maintained and students may arrange to spend a day on the job for a "career exposure" with one of these individuals.
>
> Virtually all of the students majoring in education utilize the placement services at EOSC. Over the years a consistently high percentage of these students have been successful in obtaining teaching positions. In 1974, about 90 percent of those graduating found placement. Increasingly students from other academic areas are utilizing the career planning and placement services. This year about 25% of the students have taken advantage of one or more services.[7]

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[6]See Chapter II, p. 13-16.

[7]Counseling for College, Oregon State System of Higher Education, Vol. 13, No. 6, May 12, 1975.

This exerpt can be compared to the sample Program file print-out in Chapter II for similarities.

"Mapping Your Education"

Mapping Your Education is a two-state effort by Oregon and Washington that is published annually for high school counselors and students. To date, the publication has not included a chart that clearly lists the degrees offered at each 4-year institution in the two states; it has done so for the community colleges. It has been recommended by the Office of High School Relations that for the 1976-77 edition a chart for the 4-year schools be developed using the Educational Components taxonomy.

Additional Changes

The Office receives numerous requests for information from prospective students who want to know which institutions in Oregon offer a particular program of study. The Office has communicated to CIS that it has found the Program file descriptions to be the best single reference source for this task. A copy of the Programs of Study and Training book is often referred to in answering letters. In addition, an original copy of the description is frequently requested from the Career Information System in which case the print-out itself is sent to the inquirer.

Finally, the Office of High School Relations coordinates a high school visitation program that includes nearly all of the 245 high schools in Oregon. The information contained in the Program and School files is now distributed by Office representatives to high school students when they visit schools in the fall.

CLOSER WORKING RELATIONSHIP WITH THE EDUCATIONAL COORDINATING COMMISSION

The Educational Coordinating Commission is responsible for collecting Oregon educational statistics for the National Center for Educational Statistics. The Educational Components Project has resulted in a closer working relationship between CIS and the ECC.

CIS updates the enrollment figures in its School file every January. Instead of contacting each school individually CIS now receives this data from the Educational Coordinating Commission. ECC has even agreed to alter their enrollment forms for private vocational schools so that they will fit CIS information needs and facilitate the updating process.

The Career Information System also supplies ECC with information. The research staff for the Commission keep CIS information print-outs in their office throughout the year to use as reference material.

The two agencies are in regular contact with each other for the purpose of exchanging information. The major benefit of this cooperation has been the elimination of duplicative data collection.

SUMMARY

The Office of High School Relations, a leading agency in distributing post-secondary school information, has taken significant steps toward coordinating their materials with CIS information. Included in the actions the Office has taken as a direct result of the Educational Components Project are alterations in three major publications and use of the educational components as important resource material to distribute to high school students. Also as a result of the project the Educational Coordinating Commission and CIS have established a close cooperative relationship which includes extensive data sharing. These are two good examples of the benefits to be achieved when agencies coordinate their activities. The result is economy in information development and greatly increased convenience for the people using CIS, High School Relations and Educational Coordinating Commission materials, not to mention increased use of the materials.

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